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MINES AND MINERAL STATISTICS.

ANNUAL REPORT

OF THE

DEPARTMENT OF MINES,

NEW SOUTH WALES,

FOR THE YEAR

1880.

By Authority:
SYDNEY: THOMAS RICHARDS, GOVERNMENT PRINTER.

1881.

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ANNUAL REPORT.

To the Honorable Ezekiel A. Baker, M.P., Minister for Mines, &c., &c.

Sir,

In submitting my Report upon the working of that portion of the Department of Mines charged with the administration of the Acts and Regulations in force relating to

ERRATA.

At pages 242 and 267.—Appendix 11 should read Appendix 10.

In Schedule to Map.—578,106 tons of silver should read ozs.
Coal, 20,640,075 should be tons.

would not, unless in very exceptional cases, be granted.

It will be seen that the number of mineral leases applied for in 1880 is largely in excess of that for 1879.

A very large proportion of the land applied for under mineral lease during the year is within the tin fields, and if it were possible to obtain a return of the areas occupied on those fields under mineral license for the purpose of searching for deposits of tin ore, some idea could be given of the effect which the rise in the price of tin has had upon this branch of mining. It may, however, I think be safely estimated that the area so occupied has been doubled during the year.

It is gratifying to notice the extent to which miners have availed themselves of the use of mineral licenses for the purpose of searching for minerals, especially for tin ore, as it shows that the liberal provisions in the regulations made in that behalf have supplied a want previously felt by the mining community.

Of course the use of mineral licenses for prospecting purposes would tend to reduce the number of applications made for mineral leases, but then there is a greater probability of the leases when granted being executed by the lessees, because in most cases the ground has been tested and found to contain payable deposits before an application to lease has been made.

There is also a marked increase in the area taken up for the purpose of working deposits of antimony, and there appears to be just grounds for supposing that this mineral will, ere long, form an important item in our exports.

The number of miners' rights issued during the year in excess of previous years appears to justify the assumption that a larger area of land is now held as claims.

Though we have no record of the quantity of purchased land upon which mining operations are being carried on, it is known to be very large and constantly increasing.

The following table shows approximately the area of land (other than purchased land and land occupied under miners' rights and mineral licenses) held in December, 1880, for the purposes of mining for gold and other minerals :—

AREA of land held under lease and application to lease Crown Lands, and authority to mine upon reserved lands.

Mineral.	Mining Act, 1874.			Gold Fields Act, 1866.			Crown Lands Occupation Act, 1861.			Totals.		
	a.	r.	p.	a.	r.	p.	a.	r.	p.	a.	r.	p.
Gold	4,419	2	11	281	0	0	....		....	4,700	2	11
Antimony	862	0	0	....			....			862	0	0
Alum	20	0	0	....			....			20	0	0
Asbestos	80	0	0	....			....			80	0	0
Asbestos and copper	20	0	0	....			....			20	0	0
Bismuth	165	0	0	....			....			165	0	0
Coal	61,314	2	4	....			8,931	2	0	70,246	0	4
Coal and shale	10,960	0	0	....			....			10,960	0	0
Copper	2,092	2	0	....			540	0	0	2,632	2	0
Copper and lead	40	0	0	....			....			40	0	0
Iron	20	0	0	....			....			20	0	0
Marble	40	0	0	....			....			40	0	0
Minerals not stated	60	0	0	....			377	1	33	437	1	33
Silver	550	0	0	....			....			550	0	0
Silver and copper	180	0	0	....			40	0	0	220	0	0
Shale	85	1	30	....			....			85	1	30
Slate	199	0	0	....			....			199	0	0
Sulphur	40	0	0	....			....			40	0	0
Tin	16,365	2	37	....			2,400	0	0	18,765	2	37
	97,513	3	2	281	0	0	12,288	3	33	110,083	2	35

The results as regards areas shows a very satisfactory increase in respect of nearly all the minerals, though as to the area occupied for gold-mining there is a decrease.

The reports furnished by the Geological Surveyor in charge and his assistants show that a large amount of useful work has been performed during the year, not the least important of which has been the completion and publication of a Sketch Geological Map of the Colony, from the original of the late Revd. W. B. Clarke, M.A., F.R.S., and the preparation and arrangement for the International Exhibition, in Melbourne, of a very complete representative collection of Minerals and Fossils, including many from the collection of the late Revd. W. B. Clarke, and also the arrangement of the Department's collection of the Timbers of New South Wales.

These collections have, I am happy to say, been highly appreciated by visitors and judges, and have doubtless tended in no slight degree to illustrate practically the vast and varied resources of this Colony.

The statement by the Geological Surveyor that a small collection of the minerals of this Colony sent to London has attracted attention, suggests the advisability of sending thither a good representative collection, if a suitable place for their exhibition could be secured by the Agent General.

The work in the field performed by the Geological Surveyor and his staff includes an examination of the inland limits of our coal measures at Barber's Creek, on the Great Southern Railway Line, and in the neighbourhood of Dubbo, on the Great Western Railway Line ; also of the coal measures to the south at Eden, and of those to the north in the Clarence and Richmond Districts.

Mr. Pittman, one of the assistant geological surveyors, reports that a large extent of the country drained by the Clarence and Richmond Rivers consist of coal measures which are of a newer formation than those of Newcastle or the true coal measures of this Colony. The seams seen by Mr. Pittman in the Clarence District proved to be of inferior quality, but he thinks it not improbable that workable seams occur with the lower strata of the series.

Mr. Pittman also examined the quartz reefs at Dalmorton, Cunglebung, and Cangi. He states that the rocks in the neighbourhood of the two former places are similar in texture to those at Copeland, but the reefs at Dalmorton are more regular in direction.

He visited thirty-eight reefs at and near Dalmorton and Cunglebung, all of which have been worked to a greater or less extent, and some of them appear to be well worth further working.

He states that at Dinner Creek, towards Cunglebung, on the Abercrombie Reef, gold is visible in nearly all the stone lying in the heaps.

Mr. Pittman's report contains interesting details, showing that the reefs in these localities are well worthy of further trial, and if economically and systematically worked would probably yield a good return for the capital invested.

Mr. Pittman notices, at Wilson's Downfall, in the Maryland District, rotten granite similar to that at Poverty Point, in the Clarence District, a sample of which yielded on assay 7 ozs. 19 grs. of gold and 3 ozs. 8 dwts. of silver per ton.

He also noticed good indications of copper near Gordon Brook, and fair lodes of antimony sulphide (stibnite) at Pucka and South River Range, in the Clarence District.

Before proceeding to refer to the work done during 1880 by Mr. Lamont Young, I am constrained to notice briefly the sad and mysterious disappearance of that gentleman on the southern coast near Bermagui, in October last, when about to enter upon a geological examination of the country around the then recently discovered deposit of gold on the sea-coast.

By this sad event not only has the department been deprived of the services of a gentleman whose scientific attainments specially fitted him for the position he occupied, and whose place cannot readily be filled, but it is to be feared that a gentleman whose talents gave promise of an exceptionally bright career, and who by his social worth had endeared himself to all the officers of the department, has at the very outset of life been removed from amongst us by a death as sudden as it is inexplicable.

During the earlier part of the year Mr. Young had examined and reported upon the Murrumbidgee, Kiandra, West Bogan, Temora, Mount Werong, and other districts.

He also reported upon the deposits of antimony and silver in the Macleay District.

The antimony deposits he describes as considerable but irregular, and the silver lodes, though not payable near the surface, present favourable indications, and will probably prove payable if tested in depth.

He examined the country between Parkes and Cobar, and thinks new deposits of gold, copper, and tin will be found there.

He has reported very fully on the gold deposits at Kiandra, and as to the probability of bringing water to bear upon them. He says the main deposit there has been but slightly worked, and that from the widely-separated localities in which the deposits have been found there is evidently an immense area available. He mentions that in the Empress claim, on the Nine-mile diggings, in a depth of 83 feet from the surface, there are two beds of wash, one 18 feet thick, the other 30 feet thick—this claim is said to yield during the short period that water is available, £10 per week for each man employed. In the Emperor claim, New Chum Hill, the wash is said to yield 1½ to 3½ dwts. per ton. The depth of the deposit on New Chum Hill is 116 feet, of which 30 feet is washdirt.

Mr. Young expresses an opinion that an old lead has existed in the locality of Mount Werong which was formerly covered with basalt, but that the basalt has been removed in places by denudation, while the contents of those portions of the lead have been spread over the adjacent country, and that, should the undisturbed portions of this old lead be discovered, payable gold will most likely be found.

The Geological Surveyor, in his report, furnishes some interesting particulars of borings for artesian water in the Albert District, and expresses an opinion that artesian water will be obtained in the flat country between the Darling and Paroo Rivers.

The work of examining samples of ores and minerals for prospectors and others performed by the Geological Surveyor and his staff is gradually increasing, and has proved of very great advantage in disseminating correct information respecting new discoveries. No record has hitherto been kept of the samples so examined, but the number for the year 1880 is known to exceed 200.

Besides the aid thus rendered by the department to explorers, 246 samples have been assayed or analysed.

The Chief Draftsman and his staff, have, during the year 1880, in addition to the ordinary work of the branch, prepared, compiled, and published the following maps :—

Map of the Temora Gold-field. Two editions.

Map of the Northern part of the Adelong Gold-field.

Map of the Boorook and Lunatic Gold-field.

Maps of the parishes of Tent Hill, Strathbogie, Strathbogie North, Herbert, Strachan, Arvid, and Clive, all within the tin-fields.

They also published a geological map of Hill End and Tambaroora, and plans and sections of machinery, &c., at Vegetable Creek.

They have in preparation maps of the Southern portion of the Adelong Gold-field and of the Barrington Gold-field.

They also prepared for the International Exhibition in Melbourne a copy of the Geological Map of the Colony, on a scale of 8 miles to an inch. This work contains a large amount of useful information, and reflects great credit upon Mr. Campbell and his assistants for the manner in which it has been executed.

The zeal displayed by the officers of the department, both in the head office and in the country offices, deserves special recognition, and I gratefully acknowledge the ready assistance they at all times render me, whereby I have been enabled to dispose of the increasing work of the department without additional assistance.

To the Chief Clerk (Mr. Herring) and to the Wardens I am specially indebted.

Mr. T. C. Binny, the Registrar of the department, has, in addition to the satisfactory performance of his ordinary duties, rendered me very valuable assistance in the compilation of the tables, &c., for this report.

It is my painful duty to notice the unaccountable disappearance during the latter part of the year of Mr. Warden Dalton, of Forbes, one of the most able and highly esteemed officers of the department. So far as is known, Mr. Dalton, who has for some time past been in bad health, left his head quarters to visit a distant gold-field, and has not since been heard of. Though the most careful search has been made, no trace has yet been found of this gentleman.

The reports hereto annexed are on the whole gratifying as indicating an improvement in several important branches of mining industry; but notwithstanding this, the serious drawbacks such as drought on many of our gold-fields and the disagreements between the miners and mine owners on our coal-fields, resulting in strikes, &c., has reduced the aggregate value of minerals won during the year 1880 to £1,987,874, being a decrease upon the year 1879 of £97,582.

The decrease upon the aggregate value of our minerals may be accounted for thus:—The output of coal shows a decrease of 117,201 tons, and that added to the reduction in price has reduced the value of the output below that of 1879 by £325,542.

The quantity of shale raised in 1880 is less by 13,318 tons than the output of 1879, and the value for last year is £22,205 less than that of 1879.

All the other minerals show a very satisfactory increase upon the output of 1879, but those increases are insufficient to counterbalance the decrease in coal and shale.

The increases in quantity and value for 1880 are—gold, 8,950 ozs., value £34,324; tin, 238 tons, and in value £98,988; copper, 1,252 tons, and in value £106,707; silver, 8,255 ozs., and in value £3,807; iron, 1,204 tons, and in value £4,785; antimony, 23 tons 3 cwt., and in value £606; lead, 9 tons 1 cwt., and in value £355; asbestos, 12 tons 8 cwt., and in value £323; and mixed minerals in value £270.

The following table shows the output and value of minerals during the past ten years, from which it will be seen that the aggregate value for the year 1880 is lower than for any previous year since 1871.

Whether the low price of coal will lead to such an increased output as will compensate for the reduction in price is still a matter of conjecture. The evil effects of the strikes and the disturbance of the market have been felt, but the beneficial results flowing from reduced prices have not yet been realized.

Should the anticipations of the advocates of reduction in the price of coal as regards increased output be realized during the current year, and should the present prices of tin and copper be maintained, we may fairly anticipate such an increase in the aggregate value of the output of minerals as will place the year 1881 far in advance of preceding years.

RETURN showing the quantity and value of Gold, Coal, Shale, Copper, Tin, Silver, Iron, Antimony, Lead, and Asbestos produced in the Colony of New South Wales during the last ten years.

Year.	Gold.		Coal.		Shale.		Copper:		Tin.		Silver.		Iron.		Antimony.		Lead.		Asbestos		Mixed Minerals.		Total.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
	Ozs.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Ozs.	£	T'ns.	£	T. c.	£	T. c.	£	T c.	£	T'n.	£	£
1871	323,610	1,250,485	898,784	316,340	14,700	34,050	1,444	88,876	....	....	71,812	18,681	..	....	31 0	560	..	..	..	..	..	..	1,708,992
1872	425,130	1,643,582	1,012,426	396,198	11,040	23,700	1,452	105,888	896	47,708	49,545	12,668	..	....	0 18	5	..	..	..	..	..	..	2,234,739
1873	361,785	1,395,175	1,192,862	665,747	17,850	50,475	2,846	239,102	4,571	334,436	66,998	16,278	..	....	27 12	210	..	..	..	..	..	..	2,701,423
1874	270,823	1,040,329	1,304,567	790,224	12,100	27,300	4,160	325,140	6,219	484,822	78,027	18,880	..	*15,434	12 15	122	..	..	..	..	..	..	2,701,751
1875	230,883	877,694	1,329,729	819,430	6,197	15,500	3,677	301,690	8,080	561,311	52,553	12,794	40	502	142 0	5,000	..	..	..	..	..	..	2,598,921
1876	167,412	613,190	1,319,918	803,300	15,998	47,994	3,275	249,978	6,958	439,638	69,179	15,456	2,680	13,399	40 0	140	†67 0	1,392	..	..	..	..	2,184,487
1877	124,111	471,418	1,444,271	858,998	18,963	46,524	4,518	324,226	8,054	508,540	31,409	6,673	2,600	7,600	69 12	1,181	20 12	325	..	..	231	7,725	2,238,160
1878	119,665	430,083	1,575,497	920,986	24,371	57,211	5,219	345,158	7,210	395,822	60,568	13,291	900	6,666	64 0	1,964	5 0	258	..	..	77	1,082	2,172,421
1879	109,650	407,219	1,583,381	950,879	32,519	66,980	4,142	257,352	5,921	372,349	83,164	18,071	1,118	10,550	76 16	1,046	18 13	535	..	..	25	525	2,085,456
1880	118,600	441,548	1,466,180	625,337	19,201	44,725	5,394	364,059	6,159	471,337	91,419	21,878	2,322	15,335	99 19	1,652	27 14	890	12 8	323	21	795	1,987,874
	2,492,527	9,501,684	27,196,179	7,464,225	181,519	446,979	37,122	2,667,200	54,068	3,615,458	668,087	158,466	9,660	69,486	564 7	11,830	188 19	3,400	12 8	323	354	10,127	23,949,178

* These figures represent the value of iron raised prior to the year 1875; quantity not known.

† These figures represent the quantity raised during 1876 and previous years.

GOLD.

THE reports furnished by the Wardens and Mining Registrars show that, except where gold-mining has been retarded by scarcity of water, the prospects during the year 1880 have been much more promising than during the last few preceding years.

Scarcity of water has been experienced in the Bathurst, Tambaroora and Turon, Lachlan, Mudgee, Southern, and Peel and Uralla Districts.

From most of the older gold-fields a large proportion of the miners were drawn away by the discovery of gold at Temora and at Montreal, and the same thing is now happening with regard to the recent discovery of gold at Mount Browne, in the extreme north-west corner of this Colony.

These discoveries are doubtless beneficial to the Colony in the long run, but the immediate effect is frequently a reduction in the output of gold.

This has been in a marked degree the effect of the rush to the Temora Gold-field, because many miners abandoned claims that were yielding a moderate return, on some of the older gold-fields; and owing to the scarcity of water at Temora, even those whose claims contain payable deposits have not been able to reap the reward of their enterprise and industry.

Fortunately the coarse character of the gold has enabled some of the claim-holders to extract a comparatively large quantity of gold without washing; but had a plentiful supply of water been available, there can be no doubt, not only that Temora would by this time have proved a rich and extensive gold-field, but the quantity of gold realized from the earth raised during the year would have more than compensated for the reduced yield consequent upon the abandonment of claims on the older fields.

The quantity of washdirt stacked ready for washing as soon as water is obtained is estimated by the Warden at 65,000 loads. The Mining Registrar estimates the quantity of wash-dirt stacked awaiting water at 50,113 loads, estimated to contain 30,010 ounces of gold.

The Warden says there are ninety-seven payable claims on the field, and the quartz reefs which have not yet been much worked show some very rich stone—one line is 2 feet wide, and one is as much as 4 feet, but there is no machinery on the ground.

As regards the discovery of gold at Montreal, close to the sea-coast, and on the south-east side of the Dromedary Mountain, Mr. Warden Keightley says—"The field contains rich deposits of free gold which has been subject to the action of the sea, reducing it to a water-worn condition, but evidently washed back by the sea and ranged in two terraces about high-water level * * * Experience has shown that ground considered valueless during the rush is now being proved highly auriferous, and the run has been traced to the west through terraces, and is now being found under Lake Wallaga."

The Warden has not yet succeeded in tracing any connection between this deposit and that at the Gulf Gold-field, or that on Mount Dromedary.

He says there are now over thirty claims on payable gold, some half-dozen exceedingly rich, producing from several dwts. to over 3lbs. weight of clean gold to the dish. The Warden had eight ordinary buckets of wash tested, taken off the bed rock, and it gave the handsome yield of 7 lbs. 7 oz. of gold.

At Corunna, 14 miles north of Montreal, similar deposits of black sand containing gold have been found, and also at Wagonga, while to the south of Montreal, at a place called Nelson, gold is being found in payable quantities, but of a coarser description.

A shaft has been sunk by means of water-tight boxes in Wallaga Lake, about 150 feet from the margin. The shaft was bottomed at about 28 feet on payable gold.

At the Wantiol rush, near Junee, some 600 miners are on the ground, but no rich finds have yet been reported.

The rush to Mount Werong did not produce very satisfactory results, but this was due to want of a more extensive search, especially under the basalt.

In the Carcoar District some very promising reefs have during the year been discovered and worked at Milburn Creek; the reefs so far as opened up are said to show rich stone throughout.

On Crudine Creek, in the Tambaroora and Turon District, some sluicing ground has been opened and a large extent is likely to prove payable.

At Upper Bingera, in the Peel and Uralla District, some rich ground has been opened on the wet lead. One party is said to have realized £20 per man per week for several weeks.

On the older gold-fields very satisfactory progress has been made during the year, allowance being made for the effects of the drought and the rushes to new fields.

The Warden at Carcoar reports that the Brown's Creek Company, one of the most important in the Colony, treated 20,531 tons for an average of 3 dwts. 1¾ grains per ton, being a higher average than was obtained in 1878 or 1879.

He also reports that a Company was formed to work a large reef on the Belubula River by water power—1,294 tons yielded 3 dwts. per ton—and states that there are several localities on the banks of the river where large but comparatively poor reefs could be advantageously worked by water power.

The Mining Registrar reports the finding of rich quartz at Caloola.

The Warden at Copeland calls attention to the large reefs at Cobark, which he says average ½ oz. per ton, are easily worked, and the stone could, by mean of an adit, be inexpensively conveyed to a battery, and he adds that a battery of 30 heads could be worked by water power.

In his opinion (and his experience is very extensive) this locality and the Kerriput present excellent openings for the investment of capital under good management.

He reports that many of the mines at Copeland are idle—this is probably due to the rush to newer fields, as there can be no doubt that the reefs in this locality would pay well if properly worked, and it is scarcely likely that they will be allowed to remain long unworked.

The return furnished by the Mining Registrar at Copeland shows that the stone raised during 1880, so far as the results can be obtained, averaged 2 ozs. 1 dwt. per ton. The Mining Registrar points out that the yield of gold for 1880 is less by 1,642 ozs. than 1879, but the decrease in the number of miners is so much greater that the average yield per miner is greater in 1880 than in 1879. He states that at one claim there were 400 tons of quartz at grass at the end of the year which could not be crushed for want of water. He states that the machinery on the field has increased and improved, though there are localities entirely without machinery which cannot be developed for want of it.

The Warden also reports that the reefs at Little River, Dungog, have given good returns.

The Warden at Braidwood reports that the attempt to extract the gold from the pyritous veins at Major's Creek has resulted in failure, notwithstanding the large outlay of capital. This is deeply to be regretted, as these veins have been proved to contain a large quantity of gold, and the energy and enterprise of the proprietors certainly deserved success. So far the only process by which the gold can be extracted from these veins is a chlorine process in use in Victoria, but the cost of carriage of the material to the works is so great that the margin left barely covers the cost of raising the stone. It is to be hoped that some process suitable to the treatment of this peculiar stone will be made available for the working of these veins, as thereby a profitable field for enterprise will be opened up.

From the Warden's report there appears to be a prospect of the quartz reefs at Little River, in the Braidwood District, being efficiently worked.

The Mining Registrar at Orange reports that the pyritous reefs at Lucknow, near Orange are proving richer, wider, and more permanent at 385 ft. than near the surface, but the material cannot be treated in the Colony, and has to be sent to England for treatment. Pyrites sent by the Reform Company to England for sale during the last nine months of the year realised £4,149.

The Mining Registrar at Araluen says the reefs there have been proved to contain gold in payable quantities, but owing to a mixture of base metals it cannot be extracted by any process known in the district.

At Yalwal, in the Shoalhaven District, the Warden states that, though the quartz reefs cover a wide extent of country, prospecting is confined to a very small area. The reefs at work appear to give good returns. The quartz at the Eclipse Mine is said to yield from 1½ to 4½ ozs. per ton; at the Pinnacle mine the average is 1½ oz. per ton; at the Pioneer, with a reef averaging 6 feet wide, the average yield per ton is 19 dwts. 18 grs.; at the Homeward Bound the average is 1 oz. per ton.

The extensive works in course of construction for the purpose of bringing water to work, by hydraulic mining, the numerous dykes of granite containing payable gold at Poverty Point, in the Clarence District, are not yet completed, but the Warden says that when complete a large yield of gold may be anticipated, as the water will have a pressure of 50 feet—quite sufficient to break down and reduce the soft granite, an almost unlimited extent of which is known to be auriferous. If this undertaking prove successful, there is a probability that the similar deposit at Wilson's Downfall, referred to by Mr. Geological Surveyor Pittman, will also be worked.

In the Cobar District reefs have been opened up at Tindayrie and at Honeybogle, which promise to prove payable, but work has been suspended at the latter place in consequence of a dispute as to the ownership of the land. Prospecting is said to be carried on with prospects of success at Rock Holes in the same district.

Mr. Warden Browne, who has so long and ably discharged the duties of Warden of the Mudgee Mining District, and who has recently been removed to Dubbo, in submitting his last report points out that nearly a score of tons of gold have been won with rude appliances, chiefly from alluvial deposits, within the comparatively small area worked, and that it is scarcely likely that the whole district, comprising several hundred square miles, has been completely denuded of the precious metal. From his report it appears that prospecting has been retarded by the drought, but some deep claims at Home Rule, which are paying well, have established the existence of a defined lead trending in the direction of the Britannia Lead, and thence probably making for the main channel or gutter formed by the junction of the Star and Black Leads.

Mr. Warden Browne also reports that fair progress has been made by the prospectors on the Black Lead, and he expresses an opinion that much payable ground might be opened at the Canadian if powerful steam machinery were employed to drain the lower levels; he also reports the erection of machinery to work on a large scale the extensive deposits of cement at Tallawang. He further reports the discovery of payable gold on the private property of the Honorable G. H. Cox, on the south bank of the Cudgegong and at Bara Creek, and says there are indications of payable gold being found in an extensive flat within the Havilah estate.

The Mining Registrar at Windeyer reports the finding of nuggets varying from 5 to 11 ounces on the Upper Meroo.

On the whole the outlook for 1881 appears to be satisfactory, and if a fair supply of water be obtained, the yield of gold should be largely in excess of that for 1880, which is, I am happy to say, notwithstanding the drought, slightly in excess of that for 1879.

The following table, kindly furnished by the Master of the Mint, shows the quantities of gold brought by escort and otherwise into the Royal Mint during the years 1879 and 1880:—

QUANTITIES of Gold, the produce of New South Wales, received into the Royal Mint, Sydney, during 1879 and 1880 compared.

District.	Division.	1879.	1880.	Increase.	Decrease.
		ozs.	ozs.	ozs.	ozs.
Bathurst	Bathurst	1,958·64	2,526·37	567·73	....
	Carcoar	4,568·88	5,318·35	749·47	....
	Orange	3,613·70	6,618·42	3,004·72	....
	Trunkey Creek	....	176·80	176·80	....
	Tuena	....	385·82	385·82	....
Tambaroora and Turon	Hill End	9,923·56	7,462·22	....	2,461·34
	Tambaroora	310·28	307·75	....	2·53
	Sofala	4,231·97	3,868·76	....	363·21
	Stony Creek	899·44	753·57	....	145·87
Mudgee	Mudgee.	6,350·96	7,403·89	....	946·07
	Gulgong	7,431·60	7,511·11	79·51	....
	Hargraves	1,522·93	1,715·68	192·75	....
	Wellington	2,574·33	1,207·16	....	1,367·17
Lachlan	Parkes	2,849·18	2,240·62	....	608·56
	Forbes	1,235·58	692·93	....	542·65
	Grenfell	919·46	250·67	....	668·79
	Young	1,453·57	2,477·04	1,023·47	....
	Temora	....	2,999·88	2,999·88	....
Southern	Goulburn	295·53	116·13	....	179·40
	Braidwood	4,826·73	7,965·61	3,138·88	....
	Araluen	3,238·78	2,830·85	....	407·93
	Shoalhaven	....	462·31	462·31	....
	Nerrigundah	....	701·15	701·15	....
	Bermagui	....	573·28	573·28	....
Tumut and Adelong	Adelong	10,827·11	13,229·77	2,402·66	....
	Tumut	1,329·06	1,685·39	356·33	....
	Tumbarumba	478·13	328·78	....	149·35
	Wagga Wagga	132·17	....	....	132·17
	Gundagai	48·22	73·95	25·73	....
	Cooma	362·21	411·03	48·82	....
	Kiandra	405·48	516·42	110·94	....
Peel and Uralla	Armidale	604·08	85·27	....	518·81
	Rocky River	270·93	87·23	....	183·70
	Nundle	1,418·71	1,115·69	....	303·02
	Tamworth	1,011·45	1,032·57	21·12	....
	Bingera	....	1,355·88	1,355·88	....
Hunter and Macleay	Copeland	8,853·49	8,667·00	....	186·49
New England and Clarence	Tenterfield	....	1,188·00	1,188·00	....
Not within a Mining District.	Grafton	....	1,101·48	1,101·48	....
Localities unknown	....	22,953·72	21,224·69	....	1,729·03
	Total	106,899·88	116,669·52	20,666·73	10,896·09

SUMMARY.

District.	1879.	1880.
	ozs.	ozs.
Bathurst	10,141·22	15,025·76
Tambaroora and Turon	15,365·25	12,392·30
Mudgee	17,879·82	15,837·84
Lachlan	6,457·79	8,661·14
Southern	8,361·04	12,649·33
Tumut and Adelong	13,582·38	16,245·34
Peel and Uralla	3,305·17	3,676·64
New England and Clarence	....	1,188·00
Hunter and Macleay	8,853·49	8,667·00
Not within a Mining District	....	1,101·48
Localities unknown	22,953·72	21,224·69
	106,899·88	116,669·52

The following table furnished by the Collector of Customs shows the quantity or the estimated quantity and the value of the gold exported during the year 1880.

EXPORTS—GOLD.—1880.

Dust.		Auriferous Quartz.		Total.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
ozs. 81	£ 304	pkgs. 185 2,513 cwt. pyrites.	£ 6,902	ozs. 1,931	£ 7,206

Hitherto the returns so furnished have been deemed the most reliable sources from which to ascertain the quantity of gold won in the Colony, and, in the absence of complete returns from all the mines in the Colony, these tables taken together perhaps still furnish the most reliable information on the subject, though I think it may fairly be assumed that since the export duty on gold has been removed all the gold sent out of the Colony is not recorded at the Custom House. It is at any rate a fact that, since the 1st of October, 1879, when the Act to abolish the export duty on gold came into force, the quantity of gold entered at the Custom House is very much less than before that date.

It will also be seen that the returns furnished by the Mining Registrars, as set forth in the following table, give as the result of the year's operations a larger quantity of gold by 2,472 ounces than the returns of the Mint and Custom House taken together.

RETURNS of Gold for 1880 from Mint and Mining Registrars compared.

	Mint.	Mining Registrars.	Excess.	Deficiency.
	ozs.	ozs.	ozs.	ozs.
Bathurst............................	15,026	11,006	4,020	....
Tambaroora and Turon	12,392	13,946	....	1,554
Mudgee	15,838	20,092	....	4,254
Lachlan	8,661	18,558	....	9,897
Southern	12,649	19,338	....	6,689
Tumut and Adelong	16,245	18,276	....	2,031
Peel and Uralla	3,677	7,089	....	3,412
New England and Clarence ...	1,188	3,219	....	2,031
Hunter and Macleay	8,667	9,445	....	778
Not within a Mining District...	1,101	103	998	....
Localities unknown	21,225	....	21,225	....
			26,243	30,646
				26,243

The quantity returned by the Mining Registrars exceeds the quantity sent to the Mint by... 4,403

The Mining Registrars, I am sure, spare no pains to make their returns complete, but it is quite evident that they cannot reach all the mines in their respective districts, and therefore it is quite possible that the output of gold for the year 1880 is considerably in excess of the yield as quoted in this report.

However, taking the returns of the Mint and Custom House as the most reliable—and they may be said to be thoroughly reliable to the extent that all the gold therein accounted for is the produce of this Colony—the output of gold for 1880 exceeds that of 1879 by 8,950 ozs., valued at £34,324.

According to the following table, compiled from the returns furnished by the Mining Registrars, the gold yield for 1880, as compared with 1879, shows an increase of 11,997 ozs.:—

MINING Registrar's Return of Gold for 1879 and 1880 compared.

	1879.	1880.	Increase.	Decrease.
	ozs.	ozs.	ozs.	ozs.
Bathurst..........................	9,064	11,006	1,942	....
Tambaroora and Turon........	15,595	13,946	....	1,649
Mudgee............................	21,687	20,092	....	1,595
Lachlan............................	9,443	18,558	9,115	....
Southern..........................	14,866	19,338	4,472	....
Tumut and Adelong...........	16,534	18,276	1,742	....
Peel and Uralla.................	8,165	7,089	....	1,076
New England and Clarence	3,660	3,219	....	441
Hunter and Macleay..........	10,016	9,445	....	571
Not within a Mining District	45	103	58	....
	109,075	121,072	17,329	5,332
Less decrease.................................			5,332	
Increase in yield for 1880			11,997	

The following table shows the results obtained from the treatment of certain parcels of washdirt during the years 1879 and 1880 respectively. Unfortunately, returns have been procured in either year from comparatively few claims, and for purposes of comparison are of little value, because the wash-dirt is not all treated by the same process; and whereas a very small quantity of gold per ton will pay for sluicing, a much larger yield is necessary to make wash-dirt (which requires to be puddled) pay expenses:—

COMPARATIVE statements of average yields from Alluvial Mines for 1879–80.

1879.				1880.			
District.	Quantity.	Average per ton.	Yield of Gold.	District.	Quantity.	Average per ton.	Yield of Gold.
	Tons.	ozs. dwts. grs.	ozs. dwts. grs.		Tons.	ozs. dwts. grs.	ozs. dwts. grs.
Bathurst	29,911	0 3 16·45	5,512 0 0	Bathurst	21,361	0 3 18·74	4,038 3 0
Tambaroora & Turon	475	0 9 7·32	221 0 0	Mudgee	3,090	0 6 16·00	1,030 0 0
Lachlan	18,054	0 4 9·29	3,960 10 6	Lachlan	33,443	0 5 3·82	8,626 19 8
Southern	18,772	0 0 13·87	542 9 6	Southern	230,790	0 0 4·34	2,091 0 12
Peel & Uralla........	1,300	0 0 17·35	502 0 0	Peel & Uralla......	3,500	0 2 18·85	487 10 0
Not within a Mining District...........	185	0 4 20·75	45 0 0				
Total........	68,697	0 3 3·34	10,782 19 12	Total........	292,184	0 1 2·73	16,273 17 20

The returns for 1879 included a very much smaller quantity of earth that had been sluiced than the returns for 1880, consequently the average yield for last year is much smaller than for 1879.

I still hope that miners will in course of time overcome their antipathy to furnish details of their operations, and that in consequence the Mining Registrars will be able to obtain such complete returns as will admit of a proper comparison, not only between the operations of two or more years, but also of the results by the several modes of treatment of our alluviums. Such a statement would be of the greatest value for statistical purposes, and would furnish the best indication of the value of our auriferous deposits.

The following table shows the results obtained from some of our quartz reefs during the years 1879–80. The returns furnished by the Mining Registrars for 1880 are more complete than those for the preceding year, but the average yield is very much lower. The lowest average is from the Bathurst District; this is due to the fact that in that district some very large reefs are worked for a comparatively small yield. The average yield, though smaller than that of the previous year, is far from unsatisfactory considering the quantity of stone treated. It is to be hoped that in future our large quartz reefs will receive more attention from capitalists, because, though they cannot be profitably worked by the individual miner, they might with the aid of skill and capital be made to yield a very handsome profit if worked with economy upon a large scale.

COMPARATIVE Statements of average yields from Quartz Mines for 1879–80.

1879.				1880.			
District.	Quantity.	Average per ton.	Yield of Gold.	District.	Quantity.	Average per ton.	Yield of Gold.
	Tons cwt. qrs.	ozs. dwts. grs.	ozs. dwts. grs.		Tons cwt. qrs.	ozs. dwts. grs.	ozs. dwts. grs.
Bathurst	653 0 0	0 9 14·22	313 4 0	Bathurst	5,811 0 0	0 5 11·99	1,597 18 7
Tambaroora & Turon	3,220 10 0	0 15 14·92	2,515 9 14	Tambaroora & Turon	4,188 10 0	0 15 6·72	3,196 4 13
Mudgee	1,746 0 0	0 16 3·99	1,411 6 12	Mudgee	2,420 0 0	0 9 17·25	1,176 0 0
Lachlan	2,201 10 0	0 13 13·45	1,492 13 19	Lachlan	3,023 10 0	0 12 12·48	1,892 15 0
Southern	1,198 15 0	0 12 13·14	777 16 0	Southern..........	2,102 0 0	1 0 0·28	2,103 5 0
Tumut & Adelong..	2,992 18 0	1 5 1·12	3,811 7 11	Tumut & Adelong ..	2,528 10 0	1 4 4·13	3,055 19 18
Peel and Uralla	796 0 0	1 7 10·76	1,092 9 0	Peel and Uralla	2,447 0 0	0 17 1·85	2,089 8 0
New England and Clarence	550 0 0	1 0 16·33	568 14 6	New England and Clarence........	66 5 0	7 3 10·23	475 2 0
Hunter and Macleay	3,125 10 0	2 17 2·19	3,864 18 1	Hunter and Macleay	2,082 15 0	1 15 21·88	3,813 7 19
	16,464 3 0	1 5 7·81	20,847 18 15		24,664 10 0	0 15 17·54	19,400 0 9

From the returns furnished by the Mining Registrars it would appear that the number of gold-miners in the Colony in 1880 was 13,430, including Chinese, which is a very large increase upon the number in 1879. Of this number 11,403 were engaged in alluvial, and 2,027 in quartz-mining, while in 1879 the number were, alluvial 6,476, and quartz 1,826. It is quite possible that the increase is not in fact so great as it appears, but there can be little doubt that a large number of persons from outside the Colony, or who were following other pursuits within it, were attracted to the Temora and Montreal Gold-fields. By reference to the table annexed to this report it will be seen that, while no great increase in the number of quartz-miners has taken place, the number of alluvial-miners has increased in every district except Tambaroora and Turon. The increase in the yield of gold when compared with the increase in the number of miners is small; consequently, in following the practice of previous years of dividing the gold won by the number of miners the average of their earnings appears exceedingly small, thus :—118,600 ozs. divided amongst 13,430 miners gives less than 9 ozs. per man for the year's work.

The facts are, however,—1st. That the increase in the number of miners did not take place till the latter half of the year; 2nd. At new rushes a considerable number of miners are engaged in looking about or in unproductive labour; 3rd. A very large portion of the washdirt raised at Temora during 1880 could not be treated for want of water.

Making due allowance for these special circumstances, the average has probably been quite as good as that of previous years; and taking into account the new discoveries made, and the extent of new ground prospected during the year 1880, the result of the year's operations may fairly be regarded as satisfactory, and on the whole gives promise of considerable improvement in this branch of mining.

The new finds will doubtless give employment to a large number of operative miners, and if capitalists could be induced to undertake the systematic working of the deposits on our older gold-fields, which present ample scope for the profitable employment of capital under skilful and economic management, the gold-fields of this Colony would probably take a position second to none in the world.

During the year the following assays have been made :—

Ores of gold and tailings assayed for the Department during 1880 by W. A. Dixon, F.I.C., F.C.S., Lecturer on Chemistry, Technical College, School of Arts.

It may be observed that the samples sent for assay are generally pyrites or quartz and other rock of poor quality, as when quartz or other rock is evidently payable the miner needs no assay to guide him, and only those are sent about which he is uncertain whether they contain gold or no.

GOLD ORES.

No. 1 (3). Quartz, with traces of pyrites, from near Grafton, contained—Gold, 4 dwts. 19 grs. per ton; silver, 9 dwts. 14 grs. per ton.

No. 2 (4). Similar to the last, and from the same place, contained—Gold, 2 dwts. 0 grs. per ton; silver, 4 dwts. 10 grs. per ton.

No. 3 (18). Quartz from near Grafton, sent to be assayed for gold and silver, but contained neither.

No. 4 (20). Iron pyrites in quartz, from near Grafton, contained—Gold, 1 dwt. 5 grs. per ton; silver, traces.

No. 5 (25). A ferruginous conglomerate of quartzose or pebbles from the Turon River, contained—Gold, 1 dwt. 10 grs. per ton.

No. 6 (27). Black sand from near Wagga, consisting of quartz with black grains of ferric oxide and manganese dioxide, contained—Gold, 2 ozs. 0 dwt. 19 grs. per ton; silver, 0 oz. 12 dwts. 10 grs. per ton.

No. 7 (37). Quartz and slate, impregnated with iron pyrites, from Zumballa, county Camden, contained—Gold, 0 oz. 1 dwt. 3 grs. per ton; silver, traces.

No. 8 (38). Micaceous stone, with disseminated iron pyrites, from Zumballa, contained—Gold, 1 dwt. 14 grs. per ton; silver, traces.

No. 9 (39). Dust-coloured quartz, with iron pyrites, from between Braidwood and Molonglo, county Gough, contained—Gold, 19 grs. per ton; silver, traces.

No. 10 (69). Quartz, with a little black mica and iron pyrites, from Boro, contained—Gold, 2 dwts. 5 grs. per ton.

No. 11 (70). Crushed ore from Ournie, consisting of quartz and mica, contained—Gold, 1 oz. 19 dwts. 5 grs. per ton; silver, 3 dwts. 14 grs. per ton; lead, 1·69 per cent.

No. 12 (71). Quartz and pyrites from a new reef in the Bathurst District, contained—Gold, 1 dwt. 14 grs. per ton; silver, traces.

No. 13 (88). Stebnite, from the Macleay River District, gave—Gold, 2 dwts. 10 grs. per ton; silver, traces.

No. 14 (89). Iron pyrites from Trunkey, yielded—Gold, 3 dwts. 6 grs. per ton.

No. 15 (91). Stone from Tacking Point, Port Macquarie, consisting chiefly of iron pyrites with copper pyrites and a little mispickel, gave—Gold and silver, 2 dwts. 5 grs. per ton; copper, 5·05 per cent.

No. 16 (93). Quartz stained with oxide of iron, showing a few crystals of galena and specks of gold, yielded—Gold, 1 oz. 5 dwts. 14 grs. per ton; silver, 3 dwts. 5 grs. per ton. This specimen was from Cameron's Creek, 12 miles from Armidale.

No. 17 (95). Quartz with blue and green carbonates of copper and crysocolla in small quantities, was from Winterbinne, 30 miles from Armidale, and contained neither gold nor silver. The copper amounted to 1·13 per cent.

No. 18 (98). Quartz with mispickel, from Vegetable Creek, contained traces only of gold and silver.

No. 19 (100). Blende, galena and traces of chalcopyrites, from Mitchell's Creek, near Bathurst, contained—Gold, 1 oz. 1 dwt. 0 grs. per ton; silver, 3 dwts. 10 grs. per ton; zinc, 19·67 per cent.; lead, 16·70 per cent.

No. 20 (97). Sent to be examined for bismuth from Glen Innes. This consisted of quartz with traces of molybdic oxide and molybdenite, and did not contain any bismuth; it yielded—Gold, 1 oz. 5 dwts. 5 grs.

No. 21 (101). Quartz from 12 miles from Goulburn contained—Gold, 2 dwts. 10 grs. per ton; silver, 19 dwts. 14 grs. per ton.

No. 22 (102). Quartz with blende iron pyrites and a little galena, from 12 miles from Goulburn, gave—Gold, 4 dwts. 10 grs. per ton; silver, 3 ozs. 0 dwt. 5 grs. per ton; zinc, 10·11 per cent.

No. 23 (104), Quartz and a kind of greenstone from Twofold Bay, contained—Gold, 3 dwts. 19 grs. per ton; silver, traces.

No. 24 (107). Quartzite from Wilcannia was sent to be assayed for gold and silver, but contained neither.

No. 25 (110). Stone from near Grafton, from large reef, sent to be assayed for gold and silver, but was found to contain none.

No. 26 (111). Stone from near Grafton, from 18-inch reef, being a greenish quartz, containing magnetite, gave—Gold and silver together, 1 dwt. 5 grs. per ton.

No. 27 (112). Stone from Mount Grosvenor, near Peel, had mispickel minutely disseminated through it, but neither gold nor silver.

No. 28 (115). Angular fragments of various rocks, united by a ferruginous cement, contained—Gold, 2 dwts. 14 grs. per ton; silver, 1 dwt. 5 grs. per ton. This sample came from the Clarence River District.

No. 29 and 30 (117–118). Greenish quartzite thickly impregnated with iron pyrites, and 118 a highly ferruginous quartzite from Bunamandia; each contained traces of gold.

No. 31 (119). Highly ferruginous quartz, with a little iron pyrites, from the Carcoar District, gave—Gold and silver together, 1 dwt. 5 grs. per ton.

No. 32 (120). Ferruginous and drusy quartz from the surface, there being lichens adhering to some of the pieces, from the same district as the last, yielded—Gold and silver together, 2 dwts. 0 grs. per ton.

No. 33 (121). Quartz from the Williams River, contained—Gold, 3 dwts. 14 grs. per ton; silver, 2 dwts. 19 grs. per ton.

No. 34 (129). Stone from Moreton Creek, Hastings River, being quartz with mispickel diffused through it, contained—Gold, 1 dwt. 19 grs. per ton ; silver, traces.

No. 35 (132). Quartz, with traces of pyrites, from Kookgrabookgra, contained—Gold, 4 dwts. 5 grs. per ton ; silver, 1 dwt. 10 grs. per ton.

No. 36 (138). Quartz from parish of Mangamore, county Argyle, contained—Gold, 1 dwt. 5 grs. per ton.

No. 37 (140). Ferruginous quartz, with a small quantity of pyrites and mispickel, yielded—Gold and silver together, 1 dwt. 10 grs. per ton.

No. 38 (141). Similar to the last, gave—Gold and silver, 1 dwt. 19 grs. per ton. These two samples, which were both from Yalwal, Shoalhaven River, contained no other metals of value.

No. 39 (142). Consisted of heavy spar, slightly incrusted with antimony ochre, from near Kempsey, and contained neither gold nor silver, for which it was sent to be assayed.

No. 40 (147). Stone from Reding Reef, near Yarraba, gave—Gold, 5 dwt. 5 grs. per ton ; silver, 1 dwt. 10 grs. per ton.

No. 41 (149). Iron and copper pyrites, from Canoblas, Orange, yielded—Gold, 5 dwts. 5. grs. per ton ; copper, 8·02 per cent.

No. 42 (151). Quartzite containing a little minutely disseminated pyrites, from Nowra, Shoalhaven, contained neither gold or silver.

No. 43 (162). Stone from Dungog, consisting of quartz with a trace of mispickel, sent to be assayed for gold and silver, but was found to contain neither.

No. 44 (164). Quartzite with rotten quartz and traces of mispickel from Dungog, contained neither gold nor silver.

No. 45 (167). Mispickel from the Armidale District, gave—Gold, 2 dwts. 19 grs. per ton ; silver, traces.

No. 46 (150). A highly ferruginous powder, containing traces of pyrites both iron and copper, from Cargo, contained—Gold, 7 ozs. 6 dwts. 19 grs. per ton ; silver, 12 dwts. 14 grs. per ton.

No. 47 (177). Stone from near Lithgow, consisted almost entirely of iron pyrites ; it contained—Gold 1 dwt. 14 grs. per ton.

No. 48 (181). Quartz and slate with iron pyrites, from near Tamworth, contained only traces of gold and no silver.

No. 49 (182). Quartz with a little iron pyrites, from the head of the Barrington River, contained traces of gold only.

No. 50 (186). This specimen consisted of grey-coloured quartz, with a little iron pyrites, from Oberon, and contained—Gold, 4 dwts. 10 grs. per ton ; silver, 14 grs. per ton.

No. 51 (187). This was similar to the last, and from the same locality, but contained traces only of gold and silver.

No. 52 (189). A sample of limonite and iron pyrites, from Dromedary, gave—Gold, 4 ozs. 11 dwts. 11 grs. per ton ; silver.

No. 53 (192). Crystalline quartz, from Temora, contained—Gold, 1 oz. 5 dwts. 5 grs. per ton ; silver, 3 dwts. 14 grs. per ton.

No. 54 (193). This was from the same place, and similar to the last, except that it contained traces of galena ; it contained—Gold, 6 dwts. 10 grs. per ton ; silver, 19 grs. per ton.

No. 55 (196). Quartz with minutely crystallized iron pyrites and mispickel, from Ournie, contained—Gold, 25 ozs. 14 dwts. 10 grs. per ton ; silver, 7 ozs. 10 dwts. per ton.

No. 56 (198). Bright crystalline quartz, part of which was transparent, from near Goulburn, contained—Gold, 3 dwts. 14 grs. per ton. As the quartz contained a small nodule of iron pyrites, the gold was probably contained in this mineral.

No. 57 (201). A clear sample of pale-coloured iron pyrites, from seven miles from Goulburn, gave—Gold, 1 dwt. 5 grs. per ton ; silver, 6 dwts.

No. 58 (202). A mixture of surface stones, including quartz, ferruginous quartz, and trap, from Temora, contained neither gold nor silver, for which it was sent for assay.

No. 59 (208). Stone from Wilson's Downfall, New England, consisting of decomposed granite and a little pyrites, gave—Gold, 7 ozs. 0 dwts. 14 grs. per ton ; silver, 3 ozs. 8 dwts. per ton.

No. 60 (209). Quartz from near Goulburn, sent to be assayed for gold and silver, contained traces only of the former metal.

No. 61 (220). Mispickel in quartz, from Glen Innes, contained traces of gold.

No. 62 (221). Milky quartz with iron pyrites, from near Goulburn, contained traces of gold only.

No. 63 (229). A sample of crushed reddish-coloured quartz, from Dungog, yielded—Gold and silver, 2 dwts. 10 grs. per ton.

No. 64 (230). This was a large sample of quartz, from near Temora, containing a little pyrites, and showing gold freely through the stone. It gave—Gold, 10 ozs. 16 dwts. 5 grs. per ton.

No. 65 (236). Iron pyrites in quartz, from the Hastings River, contained—Gold, 2 ozs. 6 dwts. 10 grs. per ton; silver, 1 oz. 3 dwts. 5 grs. per ton.

No. 66 (238). A fine sand consisting of copper pyrites and glance, with blue and green carbonates, from the Kaiser Mining Co., Wellington, gave—Gold, 4 dwts. 19 grs. per ton; silver, 10 dwts. 14 grs. per ton; copper, 43·35 %.

No. 67 (239). From the same place, and similar to the last, contained—Gold, 6 dwts. 14 grs. per ton; silver, 13 dwts. 10 grs. per ton; copper, 21·5 %.

No. 68 (240). Stone from Corangula Reef, Macleay River, being quartz with finely disseminated mispickel and pyrites, was found to contain no gold, and traces only of silver.

No. 69 (292). Brown hæmatite, containing peculiarly lustrous iron pyrites, from the head of the Barrington River, contained—Gold, 2 dwts. 5 grs. per ton.

TAILINGS.

No. 70 (32). Quartz tailings from Parkes contained—Gold and silver, 3 dwts. 5 grs. per ton, consisting principally of silver.

No. 71 (79). Tailings from Mitchel's Creek, county Wellington, contained traces of copper as chalcopyrites and—Gold, 11 dwts. per ton; silver, 5 dwts. 14 grs. per ton.

No. 72 (116). Tailings from the Clarence River District contained—Gold, 10 dwts. 10 grs. per ton; silver, 4 dwts. 19 grs. per ton.

As the stone from which these tailings was derived was reputed to flour the mercury during its treatment, a qualitative analysis was made. It was found to contain iron pyrites and mispickel, and a small quantity of chalcopyrites, or at all events copper in the form of sulphide. The action on the mercury would be due to these, and principally to the last.

No. 73 (130). Tailings from Yarraba contained a considerable quantity of pyrites, and—Gold, 2 ozs. 4 dwts. per ton; silver, 4 dwts. 5 grs. per ton; tin, traces.

COMPARATIVE STATEMENT of Output of Coal

	1876.				1877.			
	Tons.	Value.			Tons.	Value.		
		£	s.	d.		£	s.	d.
Output, Northern District	1,062,531	666,576	2	2	1,151,389	711,172	17	1
Increase as compared with previous year	....	....			88,858	44,596	14	11
Decrease do. do. do.	98,128	64,223	13	6	....	....		
Output, Western District	57,103	16,419	1	4	75,942	18,662	3	1
Increase as compared with previous year	38,038	9,734	5	10	18,839	2,243	1	9
Decrease do. do. do.	....	....			....	....		
Output, Southern District	200,284	120,305	2	0	216,940	129,163	8	0
Increase as compared with previous year	49,979	36,349	16	0	16,656	8,858	6	0
Decrease do. do. do.	....	....			....	....		

Nos. 74, 75, 76 (212, 213, 214). Samples of almost pure powdered pyrites, from Ournie, yielded— Gold, 2 ozs. 8 dwts. 10 grs. per ton; gold, 96 ozs. 4 dwts. 19 grs. per ton; gold, 3 ozs. 6 dwts. per ton. The samples sent were so small that one assay only could be made of each, and none of them passed satisfactorily. They also contained some silver.

No. 76b (241). A sample of powdered quartz, from Cobark, gave—Gold, 1 oz. 2 dwts. 10 grs. per ton; silver, 2 dwts. 14 grs. per ton.

For assays and analysis of gold ores, tailings, &c., made in previous year, *vide* Annual Report for 1879, pages 15 to 19.

COAL.

THE disturbance in the coal trade of the Colony has had the effect of reducing the output of coal for the year 1880, and the reduction in the price has caused a serious decrease in the value of the output as compared with 1879. The effects of the disturbance appear to have been most seriously felt in the Northern District, where the decrease in quantity in 1880 amounted to 117,312 tons, whereas the decrease in 1879 as compared with 1878 was only 44,715 tons. The decrease in quantity in the Southern District in 1880 was 26,807 tons, whereas the output in 1879 as compared with 1878 shows an increase of 28,465 tons. Consequently, the output of the Northern District has decreased since 1878 by 162,027 tons, while the output of the Southern district in 1880 is a few tons in excess of that of 1878. In the Western District the output has steadily increased each year, and the increase in the value of the output in 1880 over that of 1879 is nearly twice as large as the increase in 1879 over that of 1878.

in the Northern, Western, and Southern Districts.

1878.		1879.		1880.	
Tons.	Value.	Tons.	Value.	Tons.	Value.
	£ s. d.		£ s. d.		£ s. d.
1,241,036	754,143 1 3	1,196,321 0 0	761,471 16 4	1,079,009 9 0	459,373 4 10
89,647	42,970 4 2	…………	7,328 15 1	…………	…………
………	…………	44,715 0 0	…………	117,311 11 0	302,098 11 6
95,908	25,232 2 7	120,041 10 3	35,171 15 11	146,960 0 0	52,280 6 9
19,966	6,569 19 6	24,133 10 3	9,939 13 4	26,918 9 1	17,108 10 10
………	…………	…………	…………	…………	…………
238,553	141,561 3 6	267,018 0 0	154,235 6 0	240,211 0 0	113,683 0 0
21,613	12,397 15 6	28,465 0 0	12,674 2 6	…………	……… …
………	…………	…………	…………	26,807 0 0	40,552 6 0

If the present price of coal be maintained, it will require a very large increase of the output to bring the value up to that of 1879; but it is possible that the reduced price may increase the demand very considerably as soon as the reduction has had time to produce its effect upon buyers and consumers.

The following tables show the output of coal from the commencement of coal-mining in the Colony to 1857, and from 1858 to 1880 inclusive. Two tables are rendered necessary in consequence of the absence of any record showing the proportions of the output during the first period consumed in this Colony and exported respectively:—

QUANTITY and value of Coal raised from the opening of the Coal-seams to 1857 inclusive.

Year.	Quantity.	Average per ton.	Value.	Year.	Quantity.	Average per ton.	Value.
		£ s. d.	£			£ s. d.	£
Prior to 1829	50,000	0 10 0	25,000	1844	23,118	0 10 8·34	12,363
1829	780	0 10 1·23	394	1845	22,324	0 7 10·27	8,769
1830	4,000	0 9 0·00	1,800	1846	38,965	0 7 0·46	13,714
1831	5,000	0 8 0·00	2,000	1847	40,732	0 6 9·01	13,750
1832	7,143	0 7 0·00	2,500	1848	45,447	0 6 3·38	14,275
1833	6,812	0 7 6·73	2,575	1849	48,516	0 6 0·45	14,647
1834	8,490	0 8 10·00	3,750	1850	71,216	0 6 6·77	23,375
1835	12,392	0 8 10·19	5,483	1851	67,610	0 7 6·51	25,546
1836	12,646	0 9 1·06	5,747	1852	67,404	0 10 11·33	36,885
1837	16,083	0 9 8·81	5,828	1853	96,809	0 16 1·51	78,059
1838	17,220	0 9 9·05	8,399	1854	116,642	1 0 5·63	119,380
1839	21,283	0 9 9·73	10,441	1855	137,076	0 12 11·96	89,082
1840	30,256	0 10 10·86	16,498	1856	189,960	0 12 4·06	117,906
1841	34,841	0 12 0·00	20,905	1857	210,434	0 14 0·97	148,158
1842	39,900	0 12 0·00	23,940				
1843	25,862	0 12 6·54	16,222		1,468,961	0 11 10·72	869,391

TABLE showing the quantities and average value per ton of Coal exported to Intercolonial and Foreign Ports respectively, the quantity of Coal consumed in this Colony, and the average price per ton of the total output of the Collieries, from 1858 to 1880 inclusive.

Years.	Exports to Intercolonial Ports.			Exports to Foreign Ports.			Total Exports.			Home consumption.	Total Output and Value.		
	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.		Quantity.	Average per ton.	Value.
	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.	Tons.	£ s. d.	£ s. d.
1858........	101,488	0 15 1·67	76,824	12,089	1 0 1·85	12,132	113,527	0 15 8·05	88,956	102,870	216,397	0 14 11·84	162,162 0 0
1859........	120,586	0 14 6·67	94,312	44,349	0 17 5·27	38,672	173,935	0 15 3·49	132,984	134,278	308,213	0 13 3·14	204,371 0 0
1860........	140,183	0 14 10·85	104,471	93,694	0 16 11·10	79,290	233,877	0 15 8·57	183,761	134,985	368,862	0 12 3·36	226,493 0 0
1861........	157,278	0 15 2·25	119,433	50,502	0 16 5·37	41,532	207,780	0 15 5·92	160,965	134,287	342,067	0 12 9·52	218,820 0 0
1862........	195,427	0 15 0·55	147,019	113,355	0 17 4·34	98,403	308,782	0 15 10·75	245,422	167,740	476,522	0 12 9·73	305,234 0 0
1863........	213,909	0 13 8·40	146,532	84,129	0 17 6·10	73,649	298,038	0 14 9·30	220,181	135,851	433,889	0 10 10·66	236,230 0 0
1864........	283,539	0 10 3·74	146,199	88,927	0 14 10·90	66,289	372,466	0 11 4·91	212,488	176,546	549,012	0 9 10·10	270,171 0 0
1865........	292,664	0 9 11·83	146,129	90,304½	0 15 0·79	68,029	382,968½	0 11 2·20	214,158	202,556½	585,525	0 9 4·43	274,303 0 0
1866........	344,194	0 9 2·98	159,175	196,711	0 14 4·53	141,413	540,905	0 11 1·37	300,588	233,333	774,238	0 8 4·44	324,049 0 0
1867........	312,101	0 9 4·35	146,111	161,256	0 13 3·47	107,148	473,357	0 10 8·40	253,259	296,655	770,012	0 8 10·79	342,655 0 0
1868........	329,052	0 9 5·76	155,975	218,984	0 12 5·29	136,226	548,036	0 10 7·96	292,201	406,195	954,231	0 8 9·08	417,809 0 0
1869........	340,466	0 8 9·07	149,059	255,087	0 11 8·31	149,136	595,553	0 10 0·16	298,195	324,221	919,774	0 7 6·32	346,146 0 0
1870........	335,564	0 8 6·02	142,656	242,825	0 10 3·57	125,025	578,389	0 9 3·07	267,681	290,175	868,564	0 7 3·54	316,836 0 0
1871........	378,891	0 8 6·91	162,470	186,538	0 10 1·22	94,220	565,429	0 9 0·95	256,690	333,355	898,784	0 7 0·47	316,340 0 0
1872........	394,052	0 8 8·11	170,947	275,058	0 9 11·46	136,914	669,110	0 9 2·42	307,861	343,316	1,012,426	0 7 9·92	396,198 0 0
1873........	425,937	0 12 9·32	272,110	347,142	0 14 7·59	253,979	773,079	0 13 7·32	526,089	419,783	1,192,862	0 11 1·94	665,747 0 0
1874........	467,583	0 13 8·30	320,119	405,442	0 15 4·76	312,128	872,980	0 14 5·81	632,247	431,587	1,304,567	0 12 1·37	790,224 0 0
1875........	518,853	0 13 7·77	354,074	408,154	0 15 6·64	317,409	927,007	0 14 5·84	671,483	402,722	1,329,729	0 12 3·89	819,429 17 2
1876........	542,952	0 13 8·45	372,045	325,865	0 15 6·45	253,166	868,817	0 14 4·70	625,211	451,101	1,319,918	0 12 2·06	803,300 5 6
1877........	563,757	0 13 8·64	386,740	351,970	0 14 10·81	262,237	915,727	0 14 2·08	648,977	528,544	1,444,271	0 11 10·74	858,998 8 2
1878........	623,323	0 13 8·77	427,954	383,097	0 14 7·69	280,452	1,006,420	0 14 0·93	708,406	569,077	1,575,497	0 11 8·28	920,936 7 4
1879........	621,087	0 13 6·75	421,198	376,962	0 14 6·13	273,509	998,049	0 13 11·05	694,707	585,332	1,583,381	0 12 0·12	950,878 18 3
1880........	550,672	0 11 2·67	309,004	202,684	0 11 5·70	116,295	753,356	0 11 3·48	425,299	712,824	1,466,180	0 8 6·36	625,336 11 7
	8,262,558	0 11 11·21	4,930,556	4,915,074½	0 13 11·83	3,437,253	13,177,587½	0 12 8·36	8,365,809	7,517,383½	20,694,921	0 10 5·16	10,792,668 8 0

From the latter table it will be seen that the average price per ton is lower than it has been since 1872, though it is higher than it was in that year. Taking the average upon the total output, the price per ton in 1880 shows a reduction of 3s. 5·76d. per ton. The reduction in the price of exported coal, taking the average of the total quantity exported, is 2s. 7·57d., while the reduction in price of that sent to foreign ports is equal to 3s. 0·43d. per ton, and of that sent to intercolonial ports is equal to 2s. 4·08d. per ton.

It seems reasonable that such a considerable reduction in price should not only stimulate local manufactures but should tend to materially increase our exports, both foreign and intercolonial, but by reference to the above table it will be seen that in 1880 we sent to intercolonial ports 71,135 tons of coal less than in 1879, while to foreign ports we sent 174,278 tons less than in 1879. This may be to some extent due to the unsettled state of the coal trade.

The following very valuable report upon the analyses of coals from the principal coal fields of the world which come into competition, or are likely to come into competition, with those of this Colony, with a view to instituting a comparison between them, has been furnished by Mr. W. A. Dixon, F.C.S., F.I.C. :—

The analyses of foreign coals collated number 198; those of the coals of New South Wales 44; and are appended in tabular form. The former have been collected from various sources, and are authenticated by the name of the analysts. Those of Tookey and Ward are quoted from Dr. Percy's Metallurgy. These and some others are, however, not given by them in a form which would admit of comparison with the published analysis of Colonial coals—an ultimate analysis being always given, which has rendered necessary the calculation of the results into the proximate form which is here in use. This, if accompanied by a description of the coal, coke, and ash, gives as much information as is required to form a practical estimate of the value of a coal, although the theoretical calorific effect cannot be calculated, but this is not of so much importance, as it is impossible to say from it what the practical worth of a coal would be if burned under different conditions, or of different coals burned under the same conditions. It is unfortunate that, in the analysis of the Queensland and New Zealand coals obtainable, there are no determinations of sulphur nor of specific gravity which are of much importance, nor is any description of the coal, coke, or ash given, which precludes their proper classification.

The classification I have followed is that of Percy, who divides all into anthracite, bituminous, and hydrous coals or lignite; the second class, which includes all the coals worked in this Colony, being further divided into coking and non-coking, and the latter into cherry or soft coal, and splint or hard coal. These varieties, however, shade off into one another, and no distinct line of demarcation can be drawn between them, although the characteristic examples of any class are easily recognised.

Each class of coal produced here may best be compared with similar ones obtained elsewhere, and as the coal of the Northern District is undoubtedly the best for general purposes that may be taken first.

Of these coals there are fourteen analyses, of which Nos. 3, 4, 8, 11, 13, and 14, were made from samples fresh from the pit; the other eight samples were taken from the whole thickness of the seams, exhibited in the coal trophy at the late International Exhibition, excluding those bands which are rejected in working the seams. These samples had been already subjected to a severe test in being exposed to the action of the air and weather during seven months of an Australian summer, and had passed through the ordeal triumphantly, as they had no appearance of weathering, and the coal immediately below the surface was as bright as when fresh from the pit. The analyses bear out this conclusion, as there is no greater difference than is naturally to be expected in different samples from the same pit examined by different persons, except perhaps in the sulphur, which in most cases was a shade lower than in the fresh coal. It was one of the points of importance laid down by the Commission appointed by the Admiralty to investigate British coals for the purposes of the Navy, which was superintended generally by Sir Henry de la Beche and Dr. Lyon Playfair, whose reports to the Government were concluded in 1851, that coal "should not progressively decay, which renders it liable to spontaneous combustion." No better test of this property could be made than that to which these coals have been subjected.

Another condition laid down by the same Commission was that "It should possess considerable cohesion of its particles, so that it may not be broken into too small fragments by the constant attrition which it may experience in the vessel." This is fulfilled in our Northern coals, which are, with few exceptions, firm and not too easily crushed.

Another point was "that it should combine a considerable density with such mechanical structure that it may be easily stowed away" in small space; a condition which in coals of equal evaporative value often involves a difference of 20 per cent. Comparing, therefore, the specific weight of British coals with ours, I give in the following table the average specific gravities of various coals with the highest and lowest.

	Average.	Highest.	Lowest.
1st. 14 samples, Newcastle, New South Wales	1·311	1·347	1·280
2nd. 17 ,, Newcastle, England	1·246	1·286	1·150
3rd. 8 ,, Derbyshire	1·284	1·317	1·264
4th. 28 ,, Lancashire	1·279	1·350	1·209
5th. 36 ,, Welsh, from the Admiralty Investigation Report	1·318	1·385	1·252

This shows that our Newcastle coal is much denser than the English Newcastle, with which it comes into competition in the Eastern markets, and which it most resembles in properties. It is also higher than those of Derbyshire and Lancashire, the latter of which is shipped to the South American West Coast from Liverpool, whilst it is very little inferior in that respect to the coals of South Wales. The economic weight or the space in cubic feet occupied by one ton would thus be in its favour, as against all these English coals, by about 3 cubic feet or 6 per cent., so that a steamer's bunkers would hold about 6 per cent. more coal than if she was supplied by English Newcastle.

The following table shows the average, and highest and lowest percentage of sulphur in different coals.

	Average.	Highest.	Lowest.
1st. 14 samples, Newcastle, New South Wales	0·91	1·46	0·49
2nd. 17 ,, Newcastle, England	1·24	2·85	0·06
3rd. 31 ,, Welsh	1·34	3·42	0·64
4th. 8 ,, Derbyshire	1·06	1·42	0·72
5th. 28 ,, Lancashire	1·37	3·04	0·52

In this case the results show—contrary to what I believe to be the general opinion—that our coal contains on an average less than the coals of any of the most celebrated coal-fields of Great Britain. The highest is less in all cases except that of the Derbyshire collieries; and although the minimum does not reach that of some of the British samples, it shows that we have for all practical purposes sulphur-free coals. This is a point of very considerable importance, not only as lessening the risk of spontaneous combustion as mentioned in the report of the Commission to the Admiralty, but also allowing large quantities of coal to be burned without rendering the atmosphere impure. It has recently been shown that at St. Hellen's, where Lancashire coals are used, over 800 tons of sulphuric acid are weekly* poured into the atmosphere from that source alone, dwarfing into insignificance the escape of gases from the smelting and chemical works in the neighbourhood, in whose case the evil is only more patent from being more concentrated. The continual sending of large quantities of sulphurous oxide into the atmosphere, where it is rapidly converted into sulphuric acid, has a most injurious effect on vegetation, and is the chief reason of the difficulty of preserving trees in populous places where coal containing much sulphur is burned.

For the purpose of gas-making freedom from sulphur is a great advantage, as the sulphur compounds formed during the process are difficult to remove, and gas containing them being burned, they are converted into sulphuric acid, which exerts its destructive agency as it slowly but surely accumulates in bookbindings,† pictures, and other articles of furniture in the dwelling of the consumer.

The quantity of ash in a coal is of some importance, as it represents so much useless matter, which entails expense in removing, and if in large quantity impedes free combustion. The averages, highest, and lowest, are as follows :—

	Average.	Heighest.	Lowest.
14 samples, Newcastle, New South Wales	4·97	7·80	3·84
31 ,, Welsh	4·15	11·37	1·62
17 ,, Newcastle, England	3·82	9·12	0·20
8 ,, Derbyshire	2·54	4·64	1·23
28 ,, Lancashire	4·64	14·34	1·09

In respect of ash, the coals of our Northern Districts do not on an average stand so well as the English coal, and the disadvantage is greater when we examine the minimum amounts. The difference is, however, more than compensated for by the greater specific gravity and consequently economic weight, which enables a ship to carry more cargo, as the freight is in most cases in excess of the value of the coal at the point of departure.

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* Dr. G. Lunge. Chem. News. XLI, 14.

† Ripley. Chem. News. XLI, 64.

The last point to which attention has to be directed is the amount of volatile hydrocarbons. The presence of these in quantity has both advantages and disadvantages according to the purpose to which the coal is applied. As noted in the Admiralty report, it is disadvantageous for men-of-war, and equally so for all steamers in time of war, as such coal in the conditions under which it can be burned on board ship produces much smoke, and thus betrays the position of a steamer when it would be advantageous for offensive or defensive reasons to keep it concealed. Another objection to the use of bituminous coal on board ship is that, producing during combustion in marine boilers much smoke, it deposits a heavy coating of soot in the boiler tubes; the soot being a bad conductor reduces the generation of steam and necessitates a continual sweeping of the tubes. On the other hand, highly bituminous strongly caking coal is advantageous for land purposes, as it allows the small to be used to much greater advantage than is the case with the small of the less bituminous sorts, whilst the wide flues of land boilers are not so easily interfered with. The objections detailed above are, however, equally applicable to the small cooking ranges of American patterns, which are not designed for such fuel. For gas-making a high percentage of hydrocarbons is of course invaluable.

In the following averages I have had to take the bituminous matter and water together, as in most of the analyses of the English coals they are not given separately, which is unfortunate, as a comparison cannot be made so advantageously:—

		Average.	Highest.	Lowest.
14	samples, Newcastle, New South Wales	37·55	42·84	33·23
31	,, Welsh	21·15	37·63	9·57
17	,, Newcastle, England	36·44	43·80	26·91
8	,, Derbyshire	39·12	45·90	32·82
28	,, Lancashire	40·61	47·87	32·43

These results show that for purposes where avoidance of smoke is an object we cannot compete with Welsh coals, whilst for gas-making ours are on a par with English Newcastle.

In conclusion, the results point out that the coal from our Northern Coal-field is practically equal for all purposes to the best English coal, on the average of both, except that that of New South Wales, for the use of steamers, has the advantage of giving a more perfect combustion, with freedom from smoke.

The remarks I have made with regard to resistance to weather action on the Northern coals apply equally to those of the Southern Coast District. Analyses Nos. 1–2, were probably, and No. 7 was certainly, made upon coal fresh from the pits, whilst the remainder have been exposed during seven months. These coals differ from those of the Northern Coal-field in having generally a duller appearance, higher specific gravity, greater percentage of ash, and a less percentage of volatile hydrocarbons, in which they approach more closely the Welsh steam coal. They are of the free-burning, bituminous description.

The specific gravities compared with 36 samples of Welsh coal from the Admiralty report are as follows:—

		Average.	Highest.	Lowest.
7	samples, Southern coal	1·374	1·404	1·354
36	,, Welsh	1·318	1·385	1·252

On the average these numbers would give a gain in economic weight of about 5 per cent. in favour of our coals over those of South Wales. The results of the other constituents are:—

		Average.	Highest.	Lowest.
	Sulphur.			
7	samples, Southern coal	0·65	0·99	0·28
31	,, Welsh	1·31	3·42	0·64
	Ash.			
7	samples, Southern coal	10·25	11·28	8·76
31	,, Welsh	4·14	11·37	1·62
	Bituminous matter.			
7	samples, Southern coal	20·84	23·51	18·22
31	,, Welsh	20·09	32·78	8·57

These Southern coals appear therefore on the average to be not very much below those of South Wales in value. Of the latter, some are very much better, some very much worse, than the average, whilst there is not so much difference in those of this district. So far as stowage is concerned, the increase of ash is to some extent or perhaps entirely compensated for by the increased specific gravity,—that is to say, that a steamer which could carry a hundred tons of average coal of South Wales in her bunkers could carry 105 tons of our Southern coal; but the quantity of actual combustible matter would be the same, the additional five tons being ash. This does not afford an equivalent to the slightly increased stoking, and the labour consequent on the removal of the ash, and the coal would necessarily be worth 5 per cent. less when delivered into the bunkers. Although the amount of volatile hydrocarbons averages about the same as that of the Welsh coal, it is greater than that of those which are regarded as steam coals *par excellence*, and hence our coals would evolve more smoke, and suffer from its attendant disadvantages.

The coals of the Western District differ considerably from the others, and suffer much more from the action of the weather. They can be coked when fresh from the pit, but after exposure lose this property, at the same time generally parting with 5 or 6 per cent. of their volatile matter. The analyses Nos. 1, 4, 6, and 8 were probably made from fresh samples, whilst Nos. 2, 3, 5, and 9 had been exposed during seven months, whilst No. 7 had also probably been so for some time. In two of the first enumerated samples which did coke the product was not of much value, whilst in the other no true coke could be obtained. Coals which behave in this manner generally contain an excess of oxygen, which causes a loss of heat during the combustion of the coal, and which, acting on the hydrocarbons of the coal on exposure, causes a loss of volatile matter.

The following shows the average composition of these coals, from the nine analyses which have been made :—

	Average.	Highest.	Lowest.
Specific gravity	1·347	1·400	1·326
Water	2·29	2·90	1·95
Volatile matter	30·42	35·02	25·84
Fixed carbon	55·94	61·34	49·97
Ash	10·31	12·91	9·26
Sulphur	1·03	1·75	0·57

These coals, from their general character and properties, are unlikely to be ever exported largely, and hence it is scarcely necessary to go into a detailed comparison with others; but both these, and numerous others not now worked, or worked in a small way only, are quite as well fitted for immediate local use as a great many coals worked in Great Britain, France, the United States of America, and elsewhere. It appears from the comparison instituted above that the produce of our coal mines in the Northern and Southern Districts has not much to fear in competition with the principal coals of Great Britain, except a certain prejudice in favour of a known article by engineers and others, provided it can be put on the market to which it is sent at about the same price. The coals of the other European countries and of Eastern North America do not now and do not seem likely to enter into the competition, and hence we may dismiss them as devoid of interest.

It now remains to examine what other coals may, for local use or exportation, be brought into the market to the exclusion of both English and Australian; and here there appears to be matter for grave consideration. It is evident that if a coal can be obtained without the cost of freight it must almost invariably be cheaper than one imported; and even if its efficiency is 25 or 30 per cent. below the imported it will be cheaper for local use, and it is only for the use of ocean-going steamers or particular purposes that a better coal would be in demand. We have therefore to look not merely at the coals that are as good or better than our own, but at others which, though not so good, are usable.

On looking down the tables of analyses of coals from various sources, it will be seen that in Vancouver's Island there are three coals which bear comparison with those of our Southern coal-fields. The first analysis on the list shows such large percentages of sulphur and ash as to place it considerably lower; but as the coal is stated to contain films of calcium carbonate, it is possible that some of the sulphur may be present as sulphate of calcium, and even if it were present in other forms of combination, the carbonate would retain much of it in burning, and thus prevent its dispersion in the atmosphere, though it would not prevent a tendency to spontaneous combustion.

From Chili there is one coal of about the same value, and two from the Straits of Magellan, which are considerably better than our Southern coal, and of the same class. The second coal (lignite from Lota) from Chili is of comparatively little value, and its use would necessarily be limited and quite local. There are other coal seams known, and some of them are being opened out on the west coast of America, especially in the north, but of these I have been unable to procure analyses.

In the Indian Archipelago Labuan, a British possession on the coast of Borneo, yields four coals, any of which would successfully compete with those of our Northern District for gas-making, though they are not quite so suitable for general use. The occurrence of a coal of almost exactly similar character at Sarawak, in Borneo, not far from the coast, and distant from Labuan about 400 miles, would indicate the existence of extensive deposits. The two coals from Sumatra are quite equal to any we can produce; for, although the quantity of water contained in them is somewhat high, the ash and sulphur are low, and Dr. Percy gives them an excellent character. It seems likely, considering the character of these deposits, the cheapness of the labour procurable, and their proximity to some of our principal markets, that they may before long seriously interfere with our trade, an evil which will be precipitated by the artificial price which it has been attempted to obtain for our produce.

The coals of India hitherto discovered have been of inferior quality; the analyses of two from Hyderabad, on the Indus, which are given, show them to be about on a par with those of our Western District. On the other side of the Peninsula, at Ranigunj, about 120 miles above Calcutta, there is an extensive coal-field, but I have been unable to find any analysis from it, nor from any of the other twenty-one known coal-fields of India. The following notes by V. Ball, M.A., of the Geological Survey of India, gives some information as to this field:—"The Ranigunj coal-field is the largest and most important of the areas in which coal is worked in India. Its proximity to the line of railway and the Port of Calcutta tends to give it pre-eminence over other less favourably situated localities. The total area of coal-bearing rocks which is exposed is about 500 square miles, but it is possible that the area may be double that. At the present time (1879) there are six principal European Companies engaged in the extraction of coal, while many minor firms and native associations swell the total amount raised. Many of the seams are of considerable thickness—one which is worked contains nearly 40 feet of coal. Compared with ordinary English coal, the Ranigunj coals and Indian coals generally are very inferior in working power, still they are capable of generating steam in both locomotive and other engines, and for this purpose several hundred thousand tons are raised annually."

In China there are extensive coal-fields, which were reported on by Professor Pumpelly, of Harvard College, but such samples, with one exception, as have been examined have been of inferior quality. 150 tons of this exceptional coal was supplied to H.M.S. *Weasel*, at Taku, for $12 per ton. "It proved equal in all respects to the best Welsh coal; it burns clearly and without smoke, and produces the same percentage of clinkers and ash as Welsh coal. With the best coal supplied to the *Weasel* on the station her tubes required sweeping after the lapse of 24 hours, whereas with this coal she ran three days without sweeping." Its analysis is given second on the list of Chinese coals, and bears out this report. The high price appears to be mainly due to the expensive means of transit, as the coal had to be packed on camels 30 miles, and then conveyed by boat 120 miles; but improved means of communication would render it a dangerous rival in one of our best foreign markets.

The Japanese coals, analysed by G. H. Godfrey, in the Laboratory of the Imperial Government Mining Office of Japan, show some very good specimens. He reports them as of rather recent origin (Oolitic), and says No. 2 is the "best steam coal," whilst Nos. 4, 5, 8, and 14 are "good steam coals." The high percentage of volatile hydrocarbon would indicate, however, that they scarcely belong to the class of steam coals, as the name is usually applied, but rather to the highly bituminous class, excelling in this respect those of our Northern District.

The Queensland coals are generally high in ash, and such specimens as I have seen have been dull-coloured and tender, which decreases their value for export purposes or for use on board ship, even if they had such low ash percentage as that of the Burrum Mine. In Tasmania there does not appear to be any workable coal of value for other than strictly local use. By strictly local use I mean in the immediate neighbourhood of the mine, and in this respect they differ from the Queensland coals, which, although unsuitable for the purposes mentioned, must certainly command the market for land purposes within a large radius.

New Zealand, on the other hand, produces coal of excellent quality, and some of the specimens exhibited, with coke made from them, in the late Exhibition were very good. This was especially the case with the Brunner and Coal Pit Heath coal from Greymouth, and that from the Bay of Islands. The first of these Companies now ships coal at 12s. 6d. per ton, and the second, working an 18-feet seam, at 12s., and the analyses, as far as they go, show them to be little if anything inferior to our Northern coal. The Westport Company (analysis No. 4) are now opening out their seam at the Mount Rochford Mine, 30 feet in thickness, and the analysis shows it to be a good coal, with less ash than any in New South Wales.

In New Caledonia there are several coal seams, but I know nothing of their composition or workableness.

The result therefrom appears to be that, with the exception of Victoria and South Australia, in neither of which have any coal-seams of value been found hitherto, all our principal markets have sources of supply nearer at hand. In some instances the quality, though good enough for local use, is not equal to ours—in others it is as good, so that we have more to fear from the development of these fields than from coals sent from distant places. The coals of New Zealand are, however, of such quality as to render it possible they may enter into competition with ours in markets outside of that Colony. Nothing appears more likely to encourage mining enterprise elsewhere than uncertainty in the supply and a coal famine such as now exists in Melbourne—a market of which we have hitherto had a monopoly, and which takes one-fourth of our total production, might easily, when their mines are opened out, attract coal from New Zealand.

In boghead mineral, or kerosene shale as it is called here, we can compete against the whole world. The two deposits of this mineral which are now being worked are infinitely superior to anything that has ever been obtained elsewhere, both in the quantity and quality of the gas which may be produced from it. The density of the gas is so great, and the mineral is so fusible in the retorts, that it is not convenient for use alone; but the high illuminating power of the gas, which is equal to forty-two or forty-three standard candles, with a burner consuming 5 cubic feet per hour, renders it invaluable as an addition to ordinary bituminous coal. The illuminating power of the gas from the latter being low, it seldom gives satisfactory results, especially in foggy weather; but a small percentage (5 or 6) of this mineral so improves the light that a large demand is springing up in England; indeed it appears probable that before long the deposits at present known and worked will be unable to afford a sufficient supply.

TABULAR STATEMENT of Composition of Coals.

	Water.	Volatile Hydrocarbons.	Fixed Carbon.	Ash.	Sulphur.	Specific Gravity.	Coke.	Analyst.
BRITISH ANTHRACITES.						Not given.		
1. Glamorganshire.—Nine-foot seam, Prollfaron Colliery. Ash, pale red.	1·29	5·23	90·71	1·95	0·82		92·66	Percy.
2. Eighteen-foot seam, Prollfaron Colliery. Ash, pale greyish red.	1·19	5·91	88·50	3·63	0·77		92·13	,,
3. Cornish vein, Prollfaron Colliery. Ash, dark greyish red.	0·98	5·59	88·46	4·13	0·84		92·59	,,
4. Upper or Penygraig vein, Crom Click. Ash, greyish red.	1·19	5·24	86·43	5·25	1·89		91·68	,,
5. Lower or Welsh vein, Crom Click. Ash, pale red.	1·82	5·35	86·58	4·42	1·83		91·20	,,
6. Caermarthenshire.—Capel Ifan Colliery. Ash, red …………	1·25	3·69	92·10	1·90	1·06		94·00	,,
7. Ynysgeinon Colliery, near Llanelly. Ash, red.	1·70	5·82	89·35	1·75	1·38		91·10	,,
8. Pembrokeshire.—Land-shipping Colliery, Haverfordwest. Ash, light red.	1·40	3·80	91·77	2·05	0·98		93·82	,,
9. Caermarthenshire.—Green seam, Trimsaran Colliery. Ash red	1·60	5·43	90·60	1·30	1·07		91·90	,,
10. Greygog ,, ,, Ash, white	1·49	5·83	86·01	5·87	0·80		91·88	,,
BRITISH BITUMINOUS NON-CAKING.								
1. Glamorganshire.—Nine-foot seam, Bute Pit, Horwain. Particles slightly rounded by heat. Ash, light reddish.	0·89	8·97	87·61	1·75	0·78		89·36	,,
2. Nine-foot seam, Venalt Colliery, Slynabout Neath. Ash, light reddish.	1·57	6·83	89·43	1·43	0·74		90·86	,,
3. Venalt Colliery. Cakes partially …………	0·71	10·69	85·53	1·77	1·30		87·20	,,
4. ,, ,, ,, ,, …………	0·80	9·28	81·89	5·85	2·18		87·74	,,
5. Two-foot nine inch seam, Blaen Rhondda. Ash, red.	1·06	9·84	85·51	2·83	0·76		88·34	,,
6. Upper four-foot seam, Blaen Rhondda. Flame smokeless. Ash, red.	1·08	8·75	84·51	4·75	0·91		89·26	,,
7. Two-foot nine inch seam, Dunraven Colliery, Ponty Pridd. Flame slightly smoky. Ash, red.	0·97	10·40	86·71	1·43	0·49		88·14	,,
8. Upper four-foot seam, Dunraven Colliery, Ponty Pridd. Particles slightly rounded. Ash, red.	1·08	10·26	85·03	3·80	0·83		88·83	,,
9. "Imperial Merthyr," Aberdare. Cakes partially. Ash, pale red.	0·83	10·97	85·15	2·39	0·66		87·54	,,

Tabular Statement of Composition of Coals—*continued.*

	Water.	Volatile Hydrocarbons.	Fixed Carbon.	Ash.	Sulphur.	Specific Gravity.	Coke.	Analyst.
British Bituminous Non-caking—*continued.*								
10. Glamorganshire.—Equal parts of four-foot and two-foot nine inch seam, Bwllfa Colliery, Aberdare. Cakes partially in heating. Ash grey	0·93	9·97	84·91	3·45	0·74		88·36	Percy.
11. Steam or smokeless coal, Hirwain, Aberdare. Cakes partially. Ash grey.	0·70	9·66	85·62	3·18	0·84		89·80	,,
12. Six-foot seam, Dunraven Colliery. Particles slightly rounded by heat. Ash, red.	0·90	10·86	84·56	2·98	0·70		87·54	,,
13. "Corry's Merthyr," Aberdare. Coke coherent. Ash, pinkish white.	0·66	14·09	80·02	4·40	0·83		84·42	,,
14. Denbighshire.—Crank coal, Wrexham. Contains much "mother of coal." Ash, light red.	4·10	26·19	66·30	2·50	0·91		68·80	,,
Lancashire.—Rushey Park seam, St. Helen's. Slightly caking.	3·23	30·37	60·50	5·00	0·90	1·279	65·5	Vaux.
South Staffordshire.—Ten-yard coal, near Wolverhampton. Ash, light, bulky, yellowish grey.	11·29	31·11	56·18	1·03	0·39	1·278	57·21	,,
Sawyer coal, Grace Mary Colliery, Rowley Regis. Ten-yard seam, from the neighbourhood of an igneous dyke. Cakes slightly. Ash, buff.	6·93	27·02	55·09	8·91	1·05		64·00	Percy.
Brasils coal, Grace Mary Colliery. Cakes slightly. Flame yellow, smoky. Ash, buff.	7·74	30·94	52·70	8·00	0·62		60·70	,,
British Bituminous Caking Coal.								
Glamorganshire—Dunraven Colliery, Ponty Pridd; coke lustrous, firm, and coherent; ash, pinkish grey.	0·78	15·81	78·26	3·40	1·75	Not given.	82·66	Percy.
Cae-David seam, Tywith Colliery, Llynvi; coke, firm and coherent; ash, brownish red.	1·07	31·30	62·20	4·18	1·25		66·38	,,
Nine-foot seam, Tywith Colliery, Llynvi; coke light firm, coherent, and dark coloured; ash, greyish white.	0·66	18·27	77·62	2·38	1·07		79·90	,,
Six-foot seam, Tywith Colliery, Llynvi; coke slightly swollen; ash, pale pink.	0·64	18·57	77·72	2·00	1·07		79·72	,,
Duffryn seam, Llynvi; coke slightly swollen; ash, red.	0·87	21·45	73·00	3·92	0·76		76·92	,,
Cae-David seam, Llynvi; coke slightly swollen; ash, greyish pink.	0·64	21·96	70·69	5·43	1·28		76·12	,,
Yard seam, Llynvi; coke slightly swollen; ash, greyish pink.	0·75	21·51	74·23	2·63	0·88		76·86	,,

TABULAR STATEMENT of Composition of Coals—*continued.*

	Water.	Volatile Hydro-carbons.	Fixed Carbon.	Ash.	Sulphur.	Specific Gravity.	Coke.	Analyst.
BRITISH BITUMINOUS CAKING COAL—*continued.*								
Glamorganshire—Victoria Pit, Llynvi; coke tender; ash red ...	0·93	24·98	71·16	2·00	0·93	Not given.	73·16	Percy.
Rhondda Waterfall Colliery, Glynneath; coke lustrous, firm, coherent; ash, pinkish grey.	0·79	12·98	77·67	6·37	2·16		84·04	,,
Dynevor, near Swansea; ash pink, shaly portion contained 13·7 per cent.; best portion, 9·68 per cent.	1·00	8·57	75·93	11·37	3·13		86·30	,,
Wain-y-coed Colliery, near Swansea; coke lustrous and coherent, but tender; ash, red.	0·71	12·47	84·14	1·90	0·78		86·04	,,
Primrose Colliery, near Swansea; coke lustrous and coherent, but tender; ash, red.	0·61	14·80	80·69	3·13	0·77		83·82	,,
Nant-y-Moel Colliery, Ogmore Valley; coke firm and coherent; ash, light red.	1·08	26·07	70·07	1·63	1·15		71·70	,,
Craigseam Blaen Rhondda Colliery; coke light and porous, very little smoke; ash, red.	0·91	14·26	80·17	3·25	1·41		83·42	,,
Craig seam, Ponty Pridd; coke light and bulky, porous, in concentric layers; ash, red.	0·75	17·86	77·04	3·42	0·93		80·46	,,
Hafod coal; coke light and porous; flame yellow and smoky; ash, red.	0·88	21·61	74·82	2·05	0·64		76·87	,,
Rhondda coal; coke light and porous; flame yellow and smoky; ash, red.	0·93	23·93	71·62	2·05	1·47		73·67	,,
Llangennech Colliery, Llanelly; steam coal; flame yellow, slightly smoky; coke lustrous, firm and coherent; ash, pale red.	0·87	13·39	80·31	4·77	0·66		85·08	,,
Top coal, Glyn Corrwg Colliery. Flame yellow, rather smoky; coke firm, rather dull, in concentric layers, not porous; ash, pink.	0·79	16·96	77·66	3·06	1·53		80·72	,,
Bottom coal, Glyn Corrwg; coke and flame as last; ash, pink.	0·60	17·39	78·69	1·83	1·49		80·52	,,
Middle coal, Glyn Corrwg; coke and flame as last; ash, red.	0·73	15·50	75·33	5·75	2·69		81·08	,,
Monmouthshire—Rixa Colliery, near Newport; coke firm and coherent; ash, greyish white.	1·13	30·73	59·67	5·05	3·42		64·72	,,
Rixa Colliery, near Newport; coke and ash like last.	1·12	28·79	58·21	10·67	1·21		68·88	,,
Abertillery Colliery, near Newport	1·45	18·03	77·78	1·62	1·12		79·40	,,
Old coal or lower four-foot seam, Nant-y-glo and Blaina Collieries; coke lustrous, firm, coherent; flame, rather smoky; ash, pale red.	0·68	20·19	72·10	6·02	1·01		78·12	,,

TABULAR STATEMENT of Composition of Coals—*continued.*

	Water.	Volatile Hydro-carbons.	Fixed Carbon.	Ash.	Suphur.	Specific Gravity.	Coke.	Analyst.
BRITISH BITUMINOUS CAKING COAL—*continued.*								
Monmouthshire.—Top vein of three-quarter coal, Nant-y-glo and Blaina Collieries; coke and flame as last; ash red-grey.	0·65	22·99	71·37	4·15	1·84		75·52	Percy.
Upper four-foot vein, same colliery; coke and flame similar; ash pinkish grey.	0·65	23·84	69·83	4·87	0·81		74·60	,,
Elled vein, same colliery; coke and flame similar; ash, reddish grey.	0·66	25·37	68·67	4·55	0·75		73·22	,,
Top coal, Henllis Colliery, Newport; coke firm, coherent; flame yellow, smoky; ash, reddish grey.	1·73	27·78	60·53	8·87	1·09		69·40	,,
Bottom coal, same colliery; coke and flame similar; ash, reddish grey.	2·10	30·61	57·43	8·17	1·69		65·60	,,
Lancashire.—Best Arley coal, near Bolton; coke firm and coherent; ash, dark red	1·88	32·67	60·45	2·87	2·13	......	63·32	,,
Ince, Hall & Co.'s, Arley		35·20	62·47	1·53	0·80	1·272	64·00	Phillips.
Haydock, Little Delf		41·38	54·68	3·42	0·52	1·257	58·10	,,
Balcaires, Arley		36·06	59·57	3·32	1·05	1·26	62·89	,,
Blackley, Hurst		40·73	53·79	4·05	1·43	1·26	57·84	,,
Ince Hall, Pemberton Yard		38·58	57·26	2·34	1·82	1·348	60·60	,,
Haydock, Rushy Park		38·87	55·72	3·68	1·73	1·323	59·40	,,
Messrs. Hall, Pemberton. Four-foot		41·26	49·12	6·58	3·04	1·258	55·70	,,
Haydock, Higher Florida		47·87	48·05	3·05	1·03	1·218	51·10	,,
Ince Hall, Pemberton. Four-foot		41·85	56·01	1·09	1·05	1·276	57·10	,,
Blackbrook, Little Delf		40·45	54·17	4·31	1·07	1·26	58·48	,,
King		36·02	53·68	8·72	1·58	1·30	62·40	,,
Rushy Park Mine		42·33	50·97	5·69	1·01	1·28	56·66	,,
Blackbrook, Rushy Park		40·28	55·42	2·68	1·62	1·27	58·10	,,
Johnson and Wirthington's, Rushy Park		40·77	54·33	2·19	2·71	1·28	57·52	,,
Balcarres, Haigh Yard		32·43	62·19	3·90	1·48	1·28	66·09	,,
Laffak, Rushy Park		42·35	53·44	2·82	1·39	1·35	56·26	,,
Haydock, Florida Main		45·72	51·38	2·02	0·88	1·267	54·40	,,
Wiggan. Four-foot		38·81	55·77	4·23	1·19	1·209	60·00	,,
Ince Hall, Pemberton. Five-foot		42·15	42·16	14·34	1·35	1·269	56·50	,,
Ince Hall Furnace Vein		40·07	54·36	4·04	1·53	1·314	58·40	,,
Balcarres, Lindsay		40·76	55·84	2·00	1·40	1·126	57·84	,,
Caldwell and Thomson's, Rushy Park		40·21	57·20	1·50	1·09	1·271	58·70	,,
Balcarres. Five-foot		43·33	46·69	9·21	0·77	1·26	55·90	,,
Moss Hall, Pemberton. Five-foot		42·61	50·08	6·02	1·29	1·283	56·10	,,
Moss Hall, New Mine		41·32	54·54	3·16	0·98	1·278	57·70	,,

TABULAR STATEMENT of Composition of Coals—*continued.*

	Water.	Volatile Hydrocarbons.	Fixed Carbon.	Ash.	Sulphur.	Specific Gravity.	Coke.	Analyst.
BRITISH BITUMINOUS CAKING COAL—*continued.*								
Lancashire—Caldwell and Thomson's Higher Delf	44·39		48·25	5·95	1·41	1·274	54·20	Phillips.
Johnson and Wirthington's Sir John	42·78		44·75	11·40	1·07	1·31	56·15	,,
Scotland.—**Walsend Elgin**	40·02		47·75	10·70	1·53	1·20	58·45	,,
Wellwood	39·28		56·26	2·89	1·57	1·27	59·15	,,
Dalkeith Coronation Seam	46·12		50·40	3·10	0·38	1·316	53·50	,,
Dalkeith Jewel Seam	50·87		44·43	4·37	0·33	1·277	49·80	,,
Kilmarnock Skerrington	49·81		48·05	1·25	0·89	1·241	49·30	,,
Denbighshire—**Main coal, Wrexham; coke somewhat lustrous and coherent; ash, light red**	4·85	32·78	59·23	2·15	0·99	Not given.	61·38	Percy.
Leicestershire—Whitwich Colliery, **Coalville; flame yellow,** slightly smoky; **coke firm and compact; ash** pinkish	9·67	31·41	52·73	5·41	0·78		58·14	,,
Nottinghamshire—Shireoaks Colliery; **ash bulky, pinkish**	3·50	32·40	59·28	3·90	0·92		63·18	Dr. Noad.
Northumberland—**Newcastle coals. Name of seam not stated. Pyrites visible in the coal; coke, slightly swollen**	1·35	29·21	64·63	2·07	0·74	1·276	66·70	Vaux.
Willington	26·93		71·11	1·08	0·88	......	72·19	J. A. Phillips.
Andrew's House, Tanfield	33·55		62·99	2·14	1·32	1·26	65·13	,,
Bowden Close	29·66		67·41	2·28	0·65	......	69·69	,,
Haswell, Wallsend	37·24		62·50	0·20	0·06	1·286	62·70	,,
Newcastle, Hartley	33·70		57·47	7·14	1·69	1·29	64·61	,,
Bates', West Hartley	....		......	4·25	1·85	1·25	......	,,
West Hartley, Main	39·67		56·69	2·51	1·13	1·264	59·20	,,
Buddle's, West Hartley	....		......	3·86	1·04	1·23	......	,,
Carr's, Hartley	38·55		55·42	5·21	0·82	1·25	60·63	,,
Davidson's, West Hartley	39·13		53·65	5·84	1·38	1·25	59·49	,,
North Percy, Hartley	41·04		53·96	3·22	1·78	1·25	57·18	,,
Haswell Coal Co.'s steamboat, **Wallsend**	37·41		55·45	5·93	1·21	1·27	61·38	,,
Derwent Water, Hartley	43·80		51·10	3·73	1·37	1·27	54·83	,,
Broom Hill	37·95		56·13	3·07	2·85	1·25	59·20	,,
Original, Hartley	40·34		55·15	3·07	1·44	1·15	58·22	,,
Cooper and Sidey's, Hartley	40·70		56·26	2·33	0·71	1·26	58·59	,,
Hedley's, Hartley	26·91		62·19	9·12	1·78	1·31	72·31	,,
Derbyshire—Monkswood Colliery, near Chesterfield	2·15	30·68	64·05	1·70	1·42	......	65·75	Percy.
Earl Fitzwilliam's, Elsecar	33·39		59·24	2·46	0·91	1·296	61·60	,,
Holyland & Co.'s. ,,	36·44		58·77	3·73	1·06	1·317	62·50	,,
Earl Fitzwilliam's, Park Gate	37·19		59·90	1·80	1·11	1·311	61·70	,,
Butterley & Co.'s, Portland	38·24		59·67	1·23	0·86	1·301	60·90	,,
Butterley & Co.'s Langley	43·96		50·25	4·65	1·14	1·264	54·90	,,
Stavely	41·42		55·46	2·40	0·72	1·27	57·86	,,
Loscoe, soft	45·90		50·50	2·30	1·30	1·285	52·80	,,

Tabular Statement of Composition of Coals.—*continued.*

	Water.	Volatile Hydrocarbons.	Fixed Carbon.	Ash.	Sulphur.	Specific Gravity.	Coke.	Analyst.
COALS FROM VARIOUS SOURCES.								
Vancouver's Island.—Coal bright and black, intersected with films of carbonate of calcium; coke compact, firm, and coherent; gases burn with luminous smoky flame.	1·53	38·70	45·53	11·62	2·62	Not given.	57·15	Percy.
Coal resembles the above; colour of ash, reddish brown.	3·20	35·98	50·38	9·70	0·74		60·08	W. J. Ward.
Coal similar to that above; ash white ...	2·90	33·98	52·40	9·75	0·97		62·15	,,
From Nanaimo—Coal, hard, splintery, dull black; coke compact, moderately firm; ash dirty buff.	2·77	37·92	52·17	6·63	0·51		58·80	,,
Chili.—From near Coronel, 250 miles south of Valparaiso. Coal, hard, black, and lustrous; contains films of carbonate of calcium; coke compact and firm.	3·82	34·62	50·49	10·07	1·00		60·56	,,
Lignite from Lota; dull, brownish black, and tender; coke noncoherent.	19·35	31·70	31·86	15·58	1·51		47·44	,,
Straits of Magellan.—From two miles west of Sandy Point. Coal, black, fracture lustrous, somewhat conchoidal, intermixed with "mother of coal."	5·19	29·67	62·98	1·42	0·74		64·40	C. Tookey.
From Punta Arenas—Varies from dull to bright, fracture uneven; coke compact.	3·54	27·84	60·82	6·98	0·82		67·80	W. J. Ward.
Labuan.—Fine black colour, not unlike Wigan cannel; fracture somewhat conchoidal and bright; contains particles and sometimes lumps of light brown resin; coke semi-coherent; ash buff.	5·80	43·10	48·75	1·95	0·40		50·70	Tookey.
Labuan Coal Company. Resembles the above, but more compact.	6·10	37·50	54·25	1·85	0·30		56·10	,,
Resembles above, but contains iron pyrites and sulphate of iron. Coke light, lustrous, tender; ash, pale red.	5·50	40·91	50·01	2·15	1·43		52·16	Ward.
Coke light, lustrous, and semi-coherent; ash brownish red.	5·45	42·55	48·57	2·45	0·98		51·02	,,
Borneo.—From near Sarawak. Coal, black, with considerable lustre; coke, very hard, coherent, lustrous; ash, reddish yellow.	48·69		47·00	3·60	0·71		50·60	Tookey.
Sumatra.—From Ranti. Coal hard, homogeneous, black, lustrous, fracture somewhat conchoidal; coke, coherent; ash, red.	5·22	39·71	53·75	0·83	0·49		54·58	Ward.
From Soengei Doerian. Similar to the above, both valuable flame-producing coals.	7·05	36·49	53·95	1·43	1·08		55·48	,,
India.—From Hyderabad. Coal black, firm, laminated, uneven in fracture; coke dull, noncoherent; ash, buff.	9·12	35·33	45·19	9·55	0·81		54·74	,,

Tabular Statement of Composition of Coals—*continued.*

	Water.	Volatile Hydro-carbons.	Fixed Carbon.	Ash.	Sulphur.	Specific Gravity.	Coke.	Analysist.
India.—From Hyderabad. Coal and coke similar to last; ash, yellowish white.	8·68	43·57	44·59	12·65	0·51	Not given.	57·24	Ward.
China.—From Tientsin. Anthracite; ash, grey and sandy	2·90	7·14	70·55	19·00	0·41		89·55	Tookey.
From hills to the west of Peking. Coke firm, lustrous, and coherent; "burns clearly and without smoke, equal in all respects to the best Welsh coal." Percy.	0·53	15·60	77·65	5·82	0·40		83·47	,,
Black, bright, and uneven in fracture; yields much illuminating gas, and a firm, coherent coke; ash, grey.	1·85	34·23	49·33	13·82	0·77		63·15	,,
From Jehol in Tartary. Like last, but with much carbonate of calcium interspersed; coke, firm and coherent; ash, grey.	1·65	30·62	44·43	22·62	0·68		67·05	,,
Japan.—1. From Takasima in Nifon. Coal rather tender, somewhat jointed, with thin films of iron pyrites; fracture uneven; coke light, tender, porous; ash, pale red.	1·50	40·38	53·50	4·51	0·11		58·01	Percy.
2. Province of Hizen, Takasima. Coke, bright and hard	1·02	40·40	53·50	4·00	1·08		57·50	Godfrey.
3. Province of Hizen, Kishiyama Co., Karats. Coke, bright and hard.	39·13		51·50	5·00	4·47		56·50	,,
4. Province of Hizen, Uranotani, Karats. Coke, hard, compact, dull.	45·23		47·30	6·40	1·07		53·70	,,
5. Province of Hizen, Funakitani, Karats. Coke, hard, compact, dull.	44·63		48·50	6·00	0·87		54·50	,,
6. Province of Hizen, Shointani. Coke, imperfect, very friable.	55·35		11·30	31·00	2·35		42·30	,,
7. Province of Hizen, Sakakuchi, Karats. Coke, hard, dull.	46·12		46·90	5·60	1·38		52·50	,,
8. Province of Hizen, Koyaki. Coke, bright, light, friable.	44·97		47·80	6·20	1·03		54·00	,,
9. Province of Hizen, Matzu. Coke, bright and hard	2·08	41·96	41·70	11·00	3·26		52·70	,,
10. Iwaki. Coke very imperfect and friable	15·00	34·98	37·50	10·70	1·82		48·20	,,
11. Hitachi, Kozuda. Non-coking	72·34		18·80	8·20	0·66		27·00	,,
12. Chikugo, Ikuyama Co., Miike. Coke, bright but soft	40·29		47·40	7·80	4·51		55·20	,,
13. Ugo, Kayakusa. Coke, hard	44·92		46·00	8·00	1·08		54·00	,,
14. Ugo, Koyamura. Coke, dull, light, and friable	43·33		48·80	7·20	0·67		54·11	,,
QUEENSLAND COALS.								
Thomas' Mine, Bundamba, Ipswich	29·80		59·2	11·	Not determined		70·2	A. C. Gregory.
Jones' ,, ,, ,,	28·9		61·5	9·6	,,		71·1	,,
Waterstown Mine, Ipswich	25·2		62·0	12·8	,,		74·8	,,
Tivoli ,, ,,	26·7		66·4	6·9	,,		73·3	,,
Walloon, West Moreton	41·		42·	17·	,,		69·0	,,
Burrum Mine, Maryborough	31·5		64·	4·5	,,		68·5	,,

TABULAR STATEMENT of Composition of Coals—*continued.*

	Water.	Volatile hydro-carbons.	Fixed carbon.	Ash.	Sulphur.	Specific Gravity.	Coke.	Analyst.
TASMANIAN COALS.								
Sandfly Ranges, near North-west Bay; upper seam, 18 in. (not worked.)	5·0	23·3	62·2	8·7	0·8	Not given.	70·9	D. Lewald.
,, ,, middle ,, 28 in. (not worked.)	5·3	15·7	63·5	14·7	0·8		78·2	,,
,, ,, lower ,, 4 ft. (not worked.)	5·4	12·7	67·0	14·3	0·6		71·3	,,
Gardener's Bay Coal-mining Association	2·9	15·7	63·5	17·9	Not determined		81·4	,,
Enterprise Mine, New Town	3·7	13·9	53·1	29·3			82·4	,,
Adventure Bay, Bruni Island	3·	14·2	69·9	12·9	,,		82·8	,,
Black Diamond, York Plains	4·1	16·4	58·4	21·1	,,		79·5	,,
Jerusalem	2·8	12·5	56·8	27·9	,,		84·7	,,
Green Point, Port Cygnet	1·2	19·9	64·8	14·1	,,		78·9	,,
NEW ZEALAND.								
1. Brunner Coal Company, Grey River, bituminous caking coal; average of seven	1·59	35·68	56·62	6·11	Not determined		62·73	Skey.
2. Coal Pit Heath, Grey River, bituminous caking coal; average of seven	1·05	35·48	59·38	4·09	,,		63·47	,,
3. Kawakawa Colliery, Bay of Islands; average of seven	4·18	42·63	50·15	3·04	,,		Not stated whether there is any.	,,
4. West Port Colliery Company's Mount Rochfort Mine; average of seven	2·26	34·95	60·44	2·35	,,			,,
5. Malvern Hills, Canterbury; average of ten	4·15	19·89	68·54	7·42	,,			,,
6. Walton's Mine, Whangarei Harbour; average	7·50	35·83	41·17	10·57	,,			,,
7. Inangahua, Murray Creek; average	7·68	29·49	54·73	1·08	,,			,,
8. Mokihinui	7·28	27·38	46·61	2·75	,,			,,
9. Collingwood Mine; average	1·95	28·40	57·31	4·90	,,			,,
10. Pakawau; average	3·59	29·31	53·47	6·68	,,			,,
11. West Wanganui; average	6·70	33·98	47·55	7·75	,,			,,
12. Iwaka, Catlin's River	4·20	27·08	59·60	1·40	,,			,,
13. Mount Hamilton	1·68	39·44	49·08	9·80	,,			,,
14. Preservation Inlet, Coal Island; average	4·33	20·69	60·88	6·19	,,			,,
Hydrous Coals, Lignite and Brown Coal.								
15. Green Island Coal Company, Dunedin; average of six	17·95	37·78	40·30	3·97	,,			,,
16. Night-caps, Southland	21·38	45·96	29·30	3·36	,,			,,
17. Shag Point Coal Company, Dunedin	16·57	33·70	43·15	6·58	,,			,,
18. Kaion River, Whangaroa Harbour	14·40	28·71	49·60	1·00	,,			,,
19. Drury, Auckland	13·90	36·52	41·10	3·30	,,			,,
20. Kupakupa mine, Waikato River; average	15·00	29·11	47·45	2·45	,,			,,
21. Mokau Harbour, upper seam	11·90	36·30	47·60	4·20	,,			,,
22. ,, ,, main ,,	12·30	32·30	52·60	2·80	,,			,,
23. Upper Wanganui River; average	16·25	24·44	45·80	7·70	,,			,,
24. Upper Buller, Coal Creek; average	15·42	27·95	44·71	6·42	,,			,,
25. Jenkins's mine, Nelson	14·40	13·46	62·40	1·80	,,			,,
26. Kaitangata mine, Otago	19·61	37·25	39·41	3·73	,,			,,
27. Preservation Inlet, south of Coal Island; average	13·52	34·03	41·31	5·93	,,			,,

TABULAR STATEMENT of Composition of Coals—*continued.*

COALS OF NEW SOUTH WALES MINED FOR EXPORT.	Water.	Volatile Hydro-carbons.	Fixed Carbon.	Ash.	Sulphur.	Specific Gravity.	Coke.	Analyst.
Northern District.[*]								
1. Ferndale Colliery, Newcastle ; ash, buff-coloured	2·10	36·22	57·24	3·84	0·60	1·296	61·08	Dixon.
2. Newcastle Wallsend Colliery, near Newcastle ; ash, reddish.	2·29	34·21	58·60	4·28	0·62	1·347	62·88	,,
3. ,, ,, ,, ,, ,, pinkish.	2·75	34·17	57·22	4·64	1·22	1·333	61·86	Liversidge
4. Australian Agricultural Co.'s Colliery ; ash, white and heavy.	2·22	32·60	57·52	5·35	1·33	1·297	62·87	,,
5. ,, ,, ,, ,, reddish	1·65	35·45	57·84	4·44	0·62	1·286	63·28	Dixon.
6. Co-operative Colliery, Platsburg ; ash, reddish	2·45	34·38	58·24	4·20	0·73	1·310	62·44	,,
7. Waratah Colliery, near Newcastle ; ash, buff-coloured	2·45	38·16	54·12	4·64	0·63	1·293	58·76	,,
8. ,, ,, ,, ,, reddish	2·21	36·70	55·82	4·15	1·12	1·303	59·97	Liversidge.
9. Newcastle Coal-mining Co.'s Glebe Colliery ; ash, buff-coloured	2·14	33·36	59·16	4·76	0·58	1·283	63·92	Dixon.
10. New Lambton Colliery, near Newcastle ; ash, reddish	2·61	30·62	59·56	6·72	0·49	1·291	66·28	,,
11. Minmi Colliery, Hexham ; ash, reddish	2·59	33·87	56·49	5·61	1·44	1·280	62·10	,,
12. Redhead Coal Company ; ash, grey	2·09	33·48	57·04	6·84	0·55	1·325	63·88	,,
13. Anvil Creek Colliery ; ash, white	1·74	41·10	47·90	7·80	1·46	1·323	55·70	Liversidge.
14. Greta Colliery ; ash, buff-coloured	2·25	39·21	54·41	2·72	1·41	1·287	57·13	,,
Southern District.[†]								
1. Mount Keira Colliery ; ash, white	1·15	23·51	64·65	9·70	0·99	1·379	75·35	Liversidge.
2. Mount Kembla Colliery ; did not coke ; ash, white	1·50	19·74	67·18	10·72	0·86	1·363	None	,,
3. Illawarra Coal Company's Colliery ; ash, gray	0·70	22·04	68·08	8·76	0·42	1·354	76·84	Dixon.
4. Coal Cliff Colliery ; coke not very perfect ; ash, greyish	0·86	18·22	69·84	10·80	0·28	1·378	80·64	,,
5. Osborne Wallsend Colliery, Wollongong ; ash, grey	1·19	21·07	66·92	10·20	0·62	1·404	77·12	,,
6. Bulli Colliery ; ash, grey	0·65	21·65	65·86	11·28	0·74	1·369	76·96	,,
7. Coal Cliff Colliery	1·61	19·68	68·08	10·28	0·35	1·372	78·36	,,
Western District.[‡] *Coals mined chiefly for local use.*								
1. Lithgow Valley Coal Company's Colliery ; coke hard, fairly lustrous ; ash, white.	1·95	34·18	52·34	10·12	1·41	1·329	62·46	Liversidge.
2. Lithgow Valley Coal Company's Colliery ; ash, grey	2·24	28·48	58·80	9·68	0·80	1·340	None	Dixon.
3. Eskbank Colliery. Coal, rather dull ; ash, greyish-white	2·70	28·78	57·88	9·88	0·76	1·329	None	,,
4. ,, ,, ,, ,, coke, tender ; ash, white	2·00	33·55	49·97	12·91	1·57	1·355	63·18	Liversidge.
5. Vale of Clwydd Colliery. Coal, rather dull ; ash, grey	2·15	35·02	52·36	9·72	0·75	1·328	None	Dixon.
6. ,, ,, ,, Coke, compact, fairly lustrous ; ash, greyish white.	2·10	33·35	53·38	9·80	1·37	1·323	63·18	Liversidge.
7. Bowenfells Colliery. Ash, white and dense.	2·36	28·35	56·54	11·40	1·35	1·399	None	,,
8. Katoomba. Coal, fairly bright and hard ; coke, soft and dull ; ash, greyish white.	2·90	25·82	61·34	9·26	0·68	1·326	70·60	Dixon.
9. Katoomba. Coal, very dull-coloured ; no true coke ; ash, greyish white.	2·25	26·28	60·84	10·04	0·57	1·400	None	,,

[*] The coals of this district are all very similar in appearance, being firm and show a bright laminated structure, with traces of mineral charcoal; they are all highly bituminous, cake strongly in the fire, and yield bright, hard, sonorous cokes.

[†] The coals of this district are characterised by a somewhat dull colour, but are firm and strong. They may be classed as free-burning bituminous, as although they do not cake in the fire they are readily coked in an oven.

[‡] These coals are properly non-coking bituminous ; although they all coke when fresh from the pit, they lose this property by exposure ; they are compact, and vary in appearance from fairly bright to dull-coloured.

TABULAR STATEMENT of Composition of Coals—*continued.*

	Water.	Volatile Hydro-carbons.	Fixed Carbon.	Ash.	Sulphur.	Specific Gravity.	Coke.	Analyst.
COALS OF NEW SOUTH WALES NOT WORKED, OR WORKED FOR LOCAL CONSUMPTION ONLY.								
1. Northern District, Russell's. Coal streaky, irregular, bright and dull; coke, firm, bright, lustrous; ash, pink.	1·85	44·09	49·95	2·70	1·41	1·274	53·65	Liversidge.
2. Teralba. Coal, bright, stained with oxide of iron; coke, fairly bright; ash, reddish.	4·65	32·84	52·68	8·16	1·67	1·350	60·84	Dixon.
3. Teralba. Coal, bright; coke, dense, bright, and lustrous; ash, grey.	3·81	30·22	54·44	8·52	3·01	1·290	62·96	,,
4. Lake Macquarie. Coal, fairly bright; coke, hard and dense, moderately bright; ash, white.	3·65	31·93	54·66	8·82	0·94	1·34	63·48	,,
5. Dymock's Jamberoo. Coal, firm and compact, non-coking; ash, grey.	1·50	20·22	56·56	20·70	1·02	1·455	None	Liversidge.
6. Berrima. Coal, somewhat tender; coke, bright, lustrous, much swollen; ash, white.	1·70	32·78	53·84	10·40	1·28	1·364	64·24	,,
7. Berrima. Coal, somewhat tender; coke, soft, and dull coloured, much swollen; ash, greyish.	1·90	21·17	57·67	18·25	1·01	1·37	75·92	Dixon.
8. Berrima. Coal, rather dull coloured; much swollen, fairly lustrous and hard; ash, white.	1·21	19·95	41·30	36·56	0·98	1·56	77·86	,,
9. Berrima. Coal, rather dull coloured; coke, little swollen, dull and friable; ash, white.	1·26	15·61	48·34	33·92	0·87	1·51	82·26	,,
10. Berrima. Coal from Wingecarribee River; coal hard and bright with reddish incrustation; coke, hard, fairly lustrous; ash, white.	1·41	30·20	53·15	13·46	1·78	1·355	66·61	,,
11. Berrima. J. J. O. Atkinson; coke, swollen and fairly bright; ash, greyish white.	1·26	26·61	62·28	9·40	0·45	1·408	71·68	,,
Western District. *								
12. Rylstone, near Mudgee, Stewart, Taylor, & Co. Coal, dull, with bright fracture; coke, strong, fairly bright; ash, greyish white and bulky.	7·70	36·42	51·48	9·76	0·64	1·300	61·24	,,
13. Northern District, Rix Creek, Singleton. Coal, bright, but rather tender, slightly caking.	2·8	37·	54·0	5·6	0·51	......	59·6	Latta.

* These coals are properly non-coking bituminous—although they all coke when fresh from the pit they lose this property by exposure. They are compact, and vary in appearance from fairly bright to dull-coloured.

The following analyses of samples of coals and shales have been made since the publication of last year's report:—

Coals and shales analysed for the Department during 1880, by W. A. Dixon, F.I.C., F.C.S.

The proximate constituents only of the coals have been determined, as this, without expending too much labour upon them, gives a fairly practical idea of the value of the various samples. For use as fuel the amount of fixed carbon shows the relative value; the greater it is the greater the practical heating power, whilst for gas-making the larger the amount of volatile hydrocarbon the better. Nos. 77 to 93 (46, 61) being finished in time for last year's report, have already been included therein.

COALS AND SHALES.

No. 94 (68).—A rather dull black-coloured shale, having a choncoidal fracture, a greasy feel, and giving a black streak and powder, from Yarraba, gave on analysis—

Specific gravity, 1·247.

Analysis.	
Water	2·74
Volatile hydrocarbons	43·61
Fixed carbon	32·72
Ash	20·12
Sulphur	·81
	100·00

This shale did not coke, a loose black incoherent powder being left on heating. The ash was reddish-white in colour and voluminous, the separate grains of the material retaining their shape and individuality. This would not be of any value as an oil-making material, but would be of value for gas-making for local use.

No. 95 (132).—This sample consisted of two specimens of shale from the Mudgee District, one marked "one foot seam" and the other "three foot seam." The first of them was dark-coloured, gave a dark streak, and had a slaty fracture in one direction, and a coarse-grained and rough fracture at right angles to it. The slaty fracture showed impressions of leaves. The second specimen had a largely conchoidal coarse-grained fracture, and gave a somewhat lighter streak. A preliminary examination showed that each gave the same amount of ash, so they were analysed together, as sent.

Specific gravity, 1·728.

Analysis.	
Water	·52
Volatile hydrocarbons	33·09
Fixed carbon	11·00
Ash	55·08
Sulphur	·31
	100·00

No true coke was formed, a black incoherent powder being left. The ash was white in the one foot, and pinkish in the three foot seam. The small amount of hydrocarbons and the large percentage of ash renders them of little value for producing either oil or gas.

No. 96 (156).—This was a sample of a true splint coal, from Wallerawang. It was very firm, and contained some layers of mineral charcoal; its colour was dull brownish-black.

Specific gravity, 1·326.

Analysis.	
Water	3·85
Volatile hydrocarbons	27·69
Fixed carbon	61·56
Ash	6·88
Sulphur	·02
	100·00

The powdered coal did not form a coke, an incoherent black powder being left. On heating the coal in lumps it leaves a hard coke, slightly lustrous, the pieces having the same shape as the original coal, and showing no signs of fusion.

The ash was grey-coloured and bulky, and contained 0·19 per cent. of phosphoric oxide.

This is a good coal for the purpose to which it is intended to be applied, namely, iron-smelting, as it could be used raw with hot blast, or coked with either hot or cold, and it is sufficiently firm to carry a heavy burden of ore and fluxes. On heating it decrepitates slightly, but this does not interfere with the firmness of the coke obtained from lumps, but the small, from its character, would be useless for coking.

No. 97 (157).—Coal from Wallerawang, contained dull and bright layers in about equal proportions, the bright parts breaking with a rather large conchoidal fracture considering their thickness. This coal is a bituminous moderately-caking coal, and the specimen was of only moderate firmness.

Specific gravity, 1.327.

Analysis.

Water	3·10
Volatile hydrocarbons	34·73
Fixed carbon	51·28
Ash	10·36
Sulphur	·53
	100·00

The coke produced from the powdered coal was scarcely swollen, of moderate brightness, and not very firm. As I have learned, however, that the sample had been exposed to the air for about a year, it is probable that the freshly-dug coal would yield a much superior coke to that produced by the specimen analysed.

The ash was white, very dense, and contained 0·29 per cent. of phosphoric oxide.

This coal is not so good for iron-smelting as the last, as it contains more ash, and more phosphorus in the ash. It also contains more sulphur; and as a large quantity of it would be required to produce a ton of iron, as it would have to be used coked, more of the obnoxious ingredients would be introduced into the furnace.

Nos. 98 and 99 (174–175).—Two samples of weathered dirty-looking coals of high specific gravity, from near Hanging Rock, Marulan. Were found to contain 28·09 per cent. and 39·76 per cent. of ash respectively, and were deemed unworthy of a more detailed examination.

No. 100 (176).—A rather dull-coloured coal, having somewhat the character of splint, from Hanging Rock.

Specific gravity, 1,341.

Analysis.

Water	2·25
Volatile hydrocarbons	26·14
Fixed carbon	57·68
Ash	13·52
Sulphur	·41
	100·00

This coal scarcely forms a true coke, a very slightly coherent black mass being left; but as the specimen was evidently taken from an outcrop, where it would be more or less weathered, this character would probably be altered on opening out the seam. The ash was greyish-white.

No. 101 (183).—This was a rather dull-coloured coal, somewhat stained by oxide of iron, rather tender, and containing a considerable quantity of mineral charcoal, from the same locality as the last.

Specific gravity, 1·536.

Analysis.

Water	2·41
Volatile hydrocarbons	24·26
Fixed carbon	53·66
Ash	18·95
Sulphur	·72
	100·00

The coke produced was fairly bright and hard, and was covered with bright silvery excrescences. The ash was white.

No. 102 (184).—A moderately bright but firm coal, from the same seam as the last.

Specific gravity, 1·398.

Analysis.

Water	1·97
Volatile hydrocarbons	31·77
Fixed carbon	55·64
Ash	9.94
Sulphur	·68
	100·00

The coke contained was similar to that from the last sample, as was the ash.

No. 103 (185).—This was a dull-coloured splint-like coal, of moderate firmness, forming another band in the seam from which the last two were obtained.

Specific gravity, 1,404.

Analysis.

Water	2·13
Volatile hydrocarbons	28·75
Fixed carbon	59·00
Ash	9·55
Sulphur	·57
	100·00

The coke obtained was dull-coloured and soft. The ash was greyish-white.

No. 104 (197).—A bright bituminous, rather tender coal, from Lake Macquarie, having a specific gravity of 1·374, gave as analysis:—

Water	2·31
Volatile hydrocarbons	31·95
Fixed carbon	53·88
Ash	11·12
Sulphur	·74
	100·00

The coke produced was hard and lustrous. The ash was greyish-white.

No. 105 (225–226).—Two samples of coal, from near Marulan. They had both somewhat the appearance of cannel coal, being dull-coloured, and showing a large flat conchoidal fracture. They contained respectively:—

Fixed carbon	41·76	45·12
Ash	31·48	33·32

From the large quantity of ash contained in both samples, they would be of little value as fuel even for local use, and they do not yield sufficient volatile matter to be of value for gas-making, and it was therefore considered unnecessary to make a more detailed examination.

No. 106 (107).—Two samples of coal, from the same seam as the last, gave:—

Fixed carbon	49·60	54·84
Ash	20·96	22·56

The first of them was a bituminous coal, giving a moderately bright and firm coke; the second had more the character of a splint coal, and did not coke. They both contained pyrites in considerable quantity, and from that reason and the large percentage of ash they would be of trifling value as fuel.

The report furnished by the Examiner of Coal-fields contains very valuable information concerning our collieries, and supplies some very interesting sections of coal seams and borings. From this report it appears that we had 43 collieries under inspection and opening out in 1880, as against 37 in 1879. The number of accidents in 1880 exceeds that of 1879, there having been 8 fatal and 19 non-fatal accidents last year. The Inspector of Collieries reports that the mines are all well ventilated. The Examiner says only three complaints were made to him during the year of deficient ventilation, and these, after being inquired into, were remedied.

SHALE.

THE number of mines from which kerosene shale is being raised is only two, and the value of shale raised from 1865 to the end of 1880 exceeds half a million sterling. The following table gives the annual output:—

TABLE showing the quantity and value of Kerosene Shale produced during the years 1865 to 1880.

Year.	Quantity.	Average Price per Ton.			Total Value.		
	Tons.	£	s.	d.	£	s.	d.
1865	570	4	2	5·47	2,350	0	0
1866	2,770	2	18	10·48	8,154	0	0
1867	4,079	3	14	9·21	15,249	0	0
1868	16,952	2	17	7·11	48,816	0	0
1869	7,500	2	10	0·00	18,750	0	0
1870	8,580	3	4	3·18	27,570	0	0
1871	14,700	2	6	3·91	34,050	0	0
1872	11,040	2	11	11·91	28,700	0	0
1873	17,850	2	16	6·55	50,475	0	0
1874	12,100	2	5	1·48	27,300	0	0
1875	6,197	2	10	2·22	15,500	0	0
1876	15,998	3	0	0·00	47,994	0	0
1877	18,963	2	9	0·81	46,524	0	0
1878	24,371	2	6	11·40	57,211	0	0
1879	32,519	2	1	1·96	66,930	10	0
1880	19,201	2	6	7·03	44,724	15	0
	213,390	2	10	7·67	540,298	5	0

It will be seen by reference to the above table that the output for 1880 is very much smaller than for 1879; this is due to the fact that the New South Wales Shale and Oil Company have been working off a large stock of shale, having decided to raise the shale as required for their oil works instead of keeping a stock on hand.

TIN.

THE improvement in the price of tin has had a beneficial effect upon our tin-fields during the year 1880, not alone in regard to the increased output, but also in the opening up of new deposits.

The Warden at Inverell reports that prospecting operations in the Red Ranges have resulted in the discovery of rich alluvial deposits of tin ore at depths varying from 4 to 70 feet, that the population of the district has largely increased, and that work has been carried on vigorously, but owing to want of rain, water is very scarce, and several hundred loads of washdirt are stacked waiting a supply of water. None of the lodes in the district are at present being worked.

The Mining Registrar at Tingha reports that the largest issue of mineral licenses since 1876 was made last year—this may be taken to indicate the increase in the number of persons engaged in prospecting; he also reports that the quantity of land applied for under the Leasing Regulations for Tin-mining during the year was 4,888 acres.

The Inspector of Mines reports that payable stanniferous wash extends in the Tingha division a distance of 25 miles, and in the Vegetable Creek division, 26 miles in one direction and 38 in another.

The Warden at Glen Innes reports a large increase in the output of tin ore. Prospecting in deep ground has been carried on with energy, but operations have been retarded by excess of underground water and want of appliances to overcome it. Most of the mines are worked on tribute, the tributors getting £27 per ton for the ore raised. Some of the tributors have realized large sums during the year. A large quantity of the ore is now smelted locally. The Tent Hill Smelting Works employ on an average thirty-five men. 32,005 cwt. 3 qrs. 4 lbs. of ore purchased (average price £44 15s per ton), gave when smelted, 22,619 cwt. 1 qr. 16 lbs. of metal. About two-thirds of the ore and metal produced in the district is now sent *via* Grafton for shipment (carriage average rate 5s. per ton); the balance goes by way of Brisbane.

The Great Britain Company is employing miners to open up the tin lodes at Mole Tableland; if successful, other lodes will be opened up.

The Mining Registrar at Vegetable Creek has as usual furnished a very valuable report upon the tin mines in his district, in which reference is made to important discoveries of deep deposits of stream tin. As showing what may be done by working men on our tin-fields, Mr. Gower says: one party of six tributors realized for nine months' work, £2,500 per man, after paying all expenses, and another party of four tributors received in dividends during the year £950 each.

The Mining Registrar at Wilson's Downfall reports that the creek beds in that locality appear to be exhausted, but in the banks of the creeks deposits of stream tin are found. There are in his opinion good chances for prospectors to find valuable deposits in deep ground.

The Mining Registrar at Albury reports that the tin mines at Jingellic have started again, and are likely to be successful.

The following table shows the quantity and value of tin and tin ore exported since the opening of our tin-fields in 1872. Though the aggregate value exceeds three and a half millions sterling, still, in comparison with area of known tin-bearing land in the Colony—namely, five and a half million acres—it is exceedingly small, and shows the limited means at our disposal for developing our mineral wealth:—

TABLE showing the quantity and value of Tin exported from, and the produce of the Colony of New South Wales, since the opening of the Tin-fields in 1872.

Year.	Ingots.					Ore.					Total.				
	Quantity.		Value.			Quantity.		Value.			Quantity.		Value.		
	Tons	cwt.	£	s.	d.	Tons	cwt.	£	s.	d.	Tons	cwt.	£	s.	d.
1872	47	0	6,482	0	0	849	0	41,337	0	0	896	0	47,819	0	0
1873	911	0	107,795	0	0	3,660	0	226,641	0	0	4,571	0	334,436	0	0
1874	4,101	0	366,189	0	0	2,118	0	118,133	0	0	6,219	0	484,322	0	0
1875	6,058	0	475,168	0	0	2,022	0	86,143	0	0	8,080	0	561,311	0	0
1876	5,449	0	379,318	0	0	1,509	0	60,320	0	0	6,958	0	439,638	0	0
1877	7,230	0	477,952	0	0	124	0	30,588	0	0	7,354	0	508,540	0	0
1878	6,085	0	362,072	0	0	1,125	0	33,750	0	0	7,210	0	395,822	0	0
1879	5,107	2	343,075	0	0	813	15	29,274	0	0	5,920	17	372,349	0	0
1880	5,476	6	440,615	0	0	682	6	30,722	0	0	6,158	12	471,337	0	0
Total	40,464	8	2,958,666	0	0	12,903	1	656,908	0	0	53,367	9	3,615,574	0	0

The following assays of samples of tin ore, or supposed tin ore, have been made by Mr. Dixon during the year:—

TIN ORES.

108 (9). Tin ore, from near Tenterfield, contained—Tin, 67·9 %.
109 (10). Tin ore, from near Tenterfield, contained—Tin, 70·3 %.
110 (28). Sand, from Broadwater, supposed to be tin ore, was found to consist of quartz sand with a few minute grains of ruby and some corundum.
111 (90). Sand, from Barraba, sent as a supposed tin ore, consisted of magnetic and other oxides of iron, titanic iron, &c., but contained no tin.

COPPER.

THE quantity and value of copper exported during 1880 exceeds the export of any previous year since the opening of copper mines in this Colony; this is no doubt due to some extent to the fact that the price of copper during 1880 was more satisfactory than during the past few years.

Considering the extent of our copper-bearing country, the progress hitherto made in copper-mining has not been as great as could have been desired. The want of success which has attended the attempts to develop our copper lodes has, it is feared, in many cases, been due to want of skill on the part of those engaged in the attempt; but as our experience increases, and with the example of some of our larger and better managed copper mines to guide us, we may hope to improve upon the past.

The success which has attended the operations at some of these mines during the latter part of 1879 and 1880 has evidently had the effect of directing more attention to this branch of mining; and if the new ventures be conducted with skill and judgment, we may reasonably expect that our output will be commensurate with the extent and value of our deposits, and, as our railway system extends into the interior, lodes which have hitherto been neglected on account of the difficulties and expense of bringing the ore or metal to the seaboard will be extensively and profitably worked.

The following table shows the quantity and value of copper and copper ore exported annually since 1858.

TABLE showing the quantity and value of Copper, the produce of the Colony, exported from the Colony of New South Wales, from 1858 to 1880.

Year.	Ingots.		Ore and Regulus.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons cwt.	£	Tons cwt.	£	Tons cwt.	£
1858	....	....	58 0	1,400	58 0	1,400
1859	30 0	578	....	....	30 0	578
1860	....	....	43 0	1,535	43 0	1,535
1861	....	....	144 0	3,390	144 0	3,390
1862	....	....	213 0	5,742	213 0	5,742
1863	23 0	1,680	114 0	420	137 0	2,100
1864	54 0	5,230	....	....	54 0	5,230
1865	247 0	15,820	22 0	545	269 0	16,365
1866	255 0	18,905	23 0	1,885	278 0	20,790
1867	393 0	30,189	0 2	5	393 0	30,194
1868	644 0	23,297	172 0	4,000	816 0	27,297
1869	1,980 0	74,605	104 0	2,070	2,084 0	76,675
1870	994 0	65,671	6 0	60	1,000 0	65,731
1871	1,350 0	87,579	94 0	1,297	1,444 0	88,876
1872	1,035 0	92,736	417 0	13,152	1,452 0	105,888
1873	2,795 0	237,412	51 0	1,690	2,846 0	239,102
1874	3,638 0	311,519	522 0	13,621	4,160 0	325,140
1875	3,520 0	297,334	157 0	4,356	3,677 0	301,690
1876	3,106 0	243,142	169 0	6,836	3,275 0	249,978
1877	4,153 0	307,181	360 0	17,045	4,513 0	324,226
1878	4,983 0	337,409	236 0	7,749	5,219 0	345,158
1879	4,106 15	256,437	36 7	915	4,143 2	257,352
1880	5,262 10	359,260	131 18½	4,799	5,394 8½	364,059
Total ...	38,569 5	2,765,984	3,073 7½	92,512	41,642 10½	2,858,496

The most important and most successfully managed copper mine in the Colony at the present time is the Great Cobar Mine, and it is the most distant from the seaboard, being 497 miles west of Sydney. This Company has already smelted 47,566 tons of ore, producing 6,614 tons of fine copper; the quantity of ore smelted in 1880 being 20,224 tons of ore, producing 2,569 tons of copper, valued at £154,140, leaving 11,353 tons of ore at grass; the severe drought having seriously retarded operations.

A copper mine, known as the Nymagee Copper Mine, has been opened at Nymagee, in the Cobar District, containing very large and apparently valuable lodes of copper ore which promise to largely increase our output of copper. There are other promising mines being opened in the same district, and an important mine, 60 miles east of Cobar, has recently been opened. This mine, named the Girilambone Copper Mine, is within 15 miles of the Bogan River, near Nyngan, and only 1½ mile from the proposed line of railway to Bourke. In this mine the outcrop of ore is said to be 70 feet wide in places, and 120 feet wide in other places. Shafts have been sunk to a depth of 25 feet and 30 feet respectively, proving ores of good quality.

In the Bathurst district the Warden reports that the Peelwood Copper Mine has been regularly worked, and has treated ores valued at £5,440. At Thompson's Mine the ore raised has been sent to Lithgow for treatment, but the Company are now erecting furnaces on the mine; and the Mining Registrar reports that Messrs. Hurley and Shepherd have found copper at Mitchell's Creek.

The Warden reports the discovery of copper in the Glen Innes district, but it is not yet being worked.

The Warden of the Mudgee district says that a shaft has been sunk at Bocoble 90 feet, on portion 19, upon a lode 3 feet wide, containing 17 per cent. grey ores. He says that in one gully blue and green carbonates show on the surface more than 30 feet wide. At the Balara Mine prospecting operations are being carried on. The Kaiser Mine has been started again and is now being worked by 50 men, but will employ about 100 men when in full work. The Mining Registrar at Wellington says copper ore has been found at several places in that division, but the lodes have not been developed for want of capital.

In the Burrowa district the Mining Registrar says work has been suspended at the Frogmore Mine, but will start again shortly; he also says copper land has been taken up at Cundoo.

Land has also been taken up for copper-mining at Araluen, and the Mining Registrar at Braidwood reports the existence of copper lodes at Fairy Meadows.

Large bodies of copper ore are found at or near the surface in various parts of the newly proclaimed Albert Mining District, namely, at Mootwingee, Glen Lyon, and in the Barrier and Grey Ranges. The cost of transit and scarcity of water has hitherto retarded the development of these deposits.

The following analyses of copper ores have been made during the year by Mr. W. A. Dixon, F.S.C., F.I.C.

Copper ores analysed for the department, during 1880. As the information required only related to those metals in the ores which might be of value, complete analyses have not been made.

COPPER ORES.

112 (8). Copper ore from Sugar-loaf Hill, Wellington district, consisting principally of copper glance with copper pyrites, peacock ore, and green carbonate in smaller proportion, contained —Copper, 38·9 per cent.; silver, 15 dwts. 14 grs. per ton; gold, none.

113 (11). Copper ore consisting of chalcopyrites, blue and green carbonates, with a little cassiterite and a considerable quantity of galena, from Darby's Run, near Tingha, contained—Copper, 7·92; lead, 26·16; tin, 1·81; silver, 12 ozs. 16 dwts. 10 grs. per ton; gold, 9 grs. per ton.

114 (29). Stone from Nobby Point, Port Macquarie, consisting of a slaty rock enclosing iron pyrites and a little chalcopyrites, contained—Copper, 2·13 per cent.; silver, 2 dwts. per ton; gold, traces.

115 (45). Quartz with chrysocolla in silicate of copper, and a little sulphide (glance), near Orange, contained—Copper, 5·05 per cent.

116 (66). Chiefly galena, with green carbonate of copper, and copper and iron pyrites, from Cope's Creek, contained—Copper, 7·08 per cent.; lead, 59·69 per cent.

117 (67). Quartz with mispickel and a small quantity of copper pyrites, from near Marulan, contained—Copper, 1·12 per cent.; sulphur, 5·65 per cent.; silver, 12 dwts. 10 grs. per ton; gold, traces.

118 (78). Pyrites and grey copper ore, from Wellington, contained—Copper, 8·72 per cent., with traces of silver, but no gold.

119 (79) Iridescent copper pyrites (bastard Peacock ore), from Wellington, contained—Copper, 17·0 per cent., and neither silver nor gold.

120 (91). Iron pyrites, with a little copper, pyrites and mispickel, from Tacking Point, Port Macquarie, gave—Copper, 5·05 per cent.; gold and silver, 2 dwts. 5 grs. per ton.

121 (109). Quartz with green carbonate of copper, traces of chalcopyrites, and some specular iron, contained—Copper, 3·75 per cent.; gold and silver, none. This sample came from Murrumbidgeree, in the Wellington district.

122 (135). Copper glance and pyrites, with a considerable quantity of magnetite, from Mitchel's Creek, contained—Copper, 10·04 per cent.; silver, 7 ozs. 14 dwts. 10 grs. per ton; gold, 10 grs. per ton.

123 (136). Similar to the last, but containing more quartz, from the same place, contained—Copper, 5·04 per cent.; silver, 1 oz. 4 dwts. 10 grs. per ton; gold, traces.

124 (145). Green carbonate of copper, accompanied by much bright red gossan, from Mount Hope, contained—Copper, 4·32 per cent.

125 (143). A black chrystalline mineral, resembling augite, from the Orange district, contained—Copper, 1·10 per cent. A qualitative analysis showed the presence of no other metal of value.

126 (144). Blue and green carbonates of copper, with quartz and talcose schist, from the Orange district, contained—Copper, 20·9 per cent.; gold and silver, none.

127 (149). Iron and copper pyrites, from Canobolas, Orange, gave—Copper, 8·02 per cent.; gold, 5 dwts. 5 grs. per ton.

128 (161). Stone from Temora, being quartz with copper and iron pyrites, and a little oxide of copper. The quartz was stained green to a considerable extent by oxide of copper. The sample contained—Copper, 4·80 per cent.; silver, 2 dwts. 19 grs. per ton; gold, traces.

129 (165). Stone from Orange, being talcose schist, with green carbonate of copper, and traces of sulphides, gave—Copper, 4·20 per cent.

130 (171). Quartz stained green by copper, with copper and iron pyrites, and a little copper glance, gave—Copper, 11·4 per cent.; silver, 8 dwts. 10 grs. per ton; gold, traces. This sample came from near Temora.

131 (172). Stone from Temora, similar to the last, contained—Copper, 4·90 per cent.; silver, 17 dwts. 5 grs. per ton.; gold, traces.

132 (173). Stone from the Orange district, consisting of a black mineral, accompanied by copper and iron pyrites, gave—Copper, 3·4 per cent.; silver, 3 dwt. 14 grs. per ton; gold, traces.

133 (199). Grey copper ore, and a little pyrites with quartz, from Musswell, 12 miles from Goulburn, yielded—Copper, 28·56 per cent.; gold, none; silver, traces.

134 (200). Blue carbonate of copper, with a little green carbonate from the same place as the last, was assayed for silver and gold, but contained traces only of the former. It gave—Copper, 35·88 per cent.

135 (211). Copper glance and green carbonate, from Bingera, contained neither gold nor silver, but gave—Copper, 11·55 per cent.

136 (215) Ore from Mitchell's Creek, near Wallerawang, containing iron pyrites sent to be assayed for copper, gold, and silver, contained traces only of the two former and silver, 4 dwts. 19 grs. per ton.

137 (216). Stone from Cullen Bullen, containing iron pyrites and a little copper pyrites and glance with calcite, contained—Copper, 3·0 per cent.; silver, 9 dwts. 14 grs. per ton; gold, 10 grs. per ton.

138 (222). Quartz with copper and iron pyrites, and a considerable quantity of saline, contained—Copper, 9·85 per cent.; silver, 3 ozs. 4 dwts. 14 grs. per ton; gold, 14 grs. per ton. This sample was from 12 miles from Goulburn.

139 (238). Ore from Kaiser Mine Co., Wellington, consisting of a fine sound compound of copper pyrites, glance, and blue and green carbonates, contained—Copper, 42·35 per cent.; gold, 4 dwts. 19 grs. per ton; silver, 10 dwts. 14 grs. per ton.

140 (239). This was similar to the last in appearance, and from the same mine; it gave—Copper, 21·50 per cent.; gold, 6 dwts. 14 grs. per ton; silver, 13 dwts. 10 grs. per ton.

For analyses of copper ores previously made, see the Annual Report of this Department for the year 1879, pages 37 to 41.

SILVER.

THE output of silver for the past year, though in excess of previous years, is not so large as had been anticipated, being only 8,255 ozs. in excess of that for 1879. This result is mainly due, as will be seen by reference to the following able report by Mr. Benjamin Davey, who though not an officer of this Department is a metallurgist and mining engineer of great experience, to the fact that in the principal silver mines at Boorook the ore has changed from chloride to sulphide, and that they have no appliances on the mines suitable to treat ores of the latter class.

IN compliance with your request, I have the honor to submit the following report on the Silver and Gold-mining District of Boorook, parish of Boorook, county of Buller.

In this report I purpose to confine myself to a brief description of the principal lodes and the minerals at present discovered in the Boorook district. The situation of Boorook is well known to you, and the position of the different lodes will be seen on the plan of the district, by reference to "No. of lease."

This district was opened about ten years since for gold-mining, and the greater part of the lodes now known were discovered at that period, and several of them worked for that metal; but I am told that Boorook did not prove remunerative as a gold-field, though some very good patches were obtained.

The topographical character of Boorook is mountainous and broken, and all the mining field is within two or three miles of the junction with the main granite range, and its general aspect leads the miner to expect abundance of minerals. The geological formation is very changeable, and consists chiefly of sedimentary rock, in some places highly metamorphosed and crystalline, porphyritic schist and felspathic porphyry predominate; but there are also soft clay slates and shales, with occasional strips of fossiliferous shales. In this formation there are large outcrops of isolated masses of quartziferous porphyry and syenite, and traversed by dykes of irregular masses of trap-rock and elvans; one of the latter forms a bar across the Boorook Creek, over which the water has a vertical fall of near 100 feet. It is at this point that Mr. Miller has erected his reduction works.

The Golden Age Mine (lease No. 31) is a block of 2 acres, and distant about 2 miles from the granite range. The enclosing rock partakes of the character of a light-coloured talcose clay-slate (killas) which is peculiar to this mine. The lode has a bearing 22° east of north, with a dip or underlie west, and averages about 12 inches wide to the depth of 80 feet, and is composed of porous quartz, chlorite, clay, and a quantity of oxide of iron. The most abundant ore from surface to 80 feet deep was chloride of silver, with a little sodide and argentiferous pyrites. All the lode to this depth has been stoped out, and the chloride ore is now exhausted. The yield of silver from this ground has been over 52,000 ounces, and 250 ounces of gold. There are three shafts in this claim, No. 1 north down to 130 feet; No. 2, which is in the centre of the mine, is down 145 feet, and No. 3 south 20 feet. The former shaft cuts the blue or sulphide ore at 80 feet, and the lode in the last 50 feet of sinking will average from 18 to 20 inches wide, with a vein on each wall 2 inches thick of rich argentiferous pyrites, which will assay from 70 to 150 ounces of silver per ton. The centre of the lode is composed of a soft blue shale, rather poor in silver. Water was struck in this shaft at 125 feet. No. 2 shaft cut the blue ore at 85 feet, and the last 60 feet of sinking has gone down on a magnificent lode, which will average 30 inches wide, and rich in silver. The silver occurs in argentiferous pyrites and blende, some of which assayed as high as 800 ounces of silver and 5 ounces of gold per ton. The greater part of the lode is composed of shale impregnated throughout with rich argentiferous pyrites, sometimes in thin veins or ribbons intersecting each other in a very pretty manner. All this lode will assay over 100 ounces of silver per ton, and some parts of the shaft I estimate to be worth £150 per fathom for silver. The lode underlies fast, in some points quite 45°, but at the bottom is becoming more vertical. This shaft struck water at 140 feet from surface. It is my impression that the water will not be permanent, as the gullies descend rapidly, and to a much lower level than the bottom of the shafts. 50 feet south of No. 2 shaft 70-feet level a counter lode has been cut, which has intersected and cut off the Golden Age lode. This counter lode partakes of the character of a cross-course, and is composed mostly of clay (fluccan) and a little dark-coloured quartz in detached nodules, which near the junction with the lode were rich in silver. It is a large vein, but has no footwall; its bearing is north and south, with a dip of 4 in 6, or 66 in 100 west, and contains about 8 ounces of silver per ton, which is not sufficient to pay. I think it has served as a feeder, and has been an important agent in mineralizing the Golden Age lode. The country or formation to the west of cross-course is different from that of the Golden Age, and consists of a blue fossiliferous shale, whereas on the eastern side there have not been any fossils found. The rock in the Golden Age is also a blue shale below the 80 feet, but it is more compact, and has the character of a soft blue slate, but it does not contain fossils. The Golden Age lode has not been found west of the cross-course, but I think it will pass through and continue its course, though perhaps at a greater depth. The line of the counter lode corresponds with the Mariners' to the north and the Addison line on the south. It will be interesting to see this vein at a greater depth. The Golden Age lode has the appearance of a true fissure vein, still it lacks one important feature—it has no defined foot-wall. The lode becomes gradually richer as it approaches the cross-course, and is very rich in its vicinity. It is my impression that its silver will decrease as it goes north and away from the influence of the cross-course; but this is only an opinion, and may prove incorrect. There is now quite 15,000 ounces of silver on the surface at the Golden Age Mine awaiting treatment, the greater part of which has been taken from 60 feet of shaft.

The adjoining claim north (lease No. 39) is the Silver King, with a shaft down 70 feet on the lode, which has penetrated the blue ore, but not rich in silver; and the chloride ores in this mine are not nearly as rich as they were in the Golden Age. This is the most northern point at which the lode has been seen.

The adjoining claim south (lease No. 36) is the property of Messrs. Hall, Horton, & Co., and has two shafts down about 70 feet, from which a little silver has been obtained, but not sufficient to pay working expenses. The south shaft is sunk on the counter lode and the north shaft on a small parallel vein east of Golden Age, which also carry a little silver. The Golden Age lode has not been found in this claim, but a cross-cut west has been driven from the north shaft in search. This cross-cut has intersected the counter vein and penetrated a long distance into the fossiliferous shale, but no indication of the lode has been seen. I have shown the cross-cut in plan, and it will be seen that it has not reached the line of the Age lode by several feet. I think there will be a better chance of finding the continuation of the lode at a greater depth.

The adjoining claim south (lease No. 37) is that of Ellis and Carr. A drive has been put in from the gully and cut the counter lode, which has the same character as in the Golden Age.

The next claim south (lease No. 35), Horton and Funnell, has a shaft down 20 feet on the lode, which is composed of quartz, and runs to a wedge in bottom of shaft. This shaft is on the Addison Reef and on the line of the cross-course, which would imply that the Addison Reef and the dyke or cross-course is one and the same vein, filled in by quartz. Whether this is the case or not remains to be seen, but the character of the Addison Reef and the cross-course are entirely different, for the latter is composed, as before stated, of fluccan with very little quartz, whereas the former is almost all quartz with two well-defined walls and much less dip than the counter vein.

The next claim south (lease No. 34) is Simmons and Donaldson. There is a shaft down 40 feet on the Addison vein; it is a large masterly lode 5 feet wide, composed of white and blue quartz, chlorite, and a vein of clay deeply stained with oxide of iron (gossan), and contains chloride of silver, some samples assaying 320 ozs. of silver and 10 ozs. of gold. There is sulphide of silver (stephanite) contained in the blue quartz, and a little rich argentiferous pyrites, some of which when concentrated assayed 1,200 ozs. of silver and 25 ozs. of gold per ton.

Note.—There would have been a little sulphuret of silver mixed with the pyrites. All the stone taken from this shaft has been treated at a fair profit, extracting only half of the silver, as the silver contained in the pyrites could not be extracted by the pan process without chlorination.

The adjoining claim south (lease No. 33) is Flannery & Co. There are two shafts down 70 and 80 feet respectively, sunk in the lode. The south shaft, 70 feet deep there, is a very large lode, but much disordered. There was a little good silver ore taken from this shaft. The north shaft is down 80 feet, the lode is 6 feet wide at surface, but only 2 feet in bottom of shaft. It is a well-defined lode, and some good ore was taken from it. There is also a large quantity of blende which is not rich in silver.

The next is the prospecting claim (lease No. 32). There is a shaft down 70 feet, at which depth the lode has converged to a wedge point. At 30 feet from surface there are two drives, one a few feet south where the lode is small and disordered, and one a few feet north; here there is a fine lode 5 feet wide composed of quartz stained with oxide of iron, chlorite, iron pyrites, a little blende, and sulphuret of silver. On the hanging wall there is a continuous vein from 5 to 6 inches wide, which will average 150 ozs. of silver per ton, and 4·50 ozs. of gold. It is represented that some fine specimens of gold were found when sinking this shaft: I have not seen any myself.

In the lease No. 38 to the south there has but little work been done, and the lode has also terminated to a point. The lode has not been seen south of this claim.

The Addison is a large champion lode with well defined walls, and certainly is worthy of being explored, for which a good capital will be required. I have an impression that it may prove to be a converging vein, but should it continue in depth I think there is every probability of its being a rich lode. It is the only lode in the district from which I have seen genuine sulphuret of silver.

I have been thus particular in my description of the foregoing claims, as I consider they are situated on the most important line of lodes yet discovered in this district.

The Grand Junction Mine (lease No. 97). The lode has a bearing 35° east of north and is almost vertical, slightly dipping west, and can be distinctly seen in the trenches opened in its back through all the claim. There is a shaft down about 42 feet on the lode, which is from 10 to 14 inches wide, composed of quartz, sometimes compact and white, at others porous and deeply stained with oxide of iron, accompanied with a talcose clay and chlorite, chloride of silver, with a little chloride and carbonate of lead, a little iron pyrites (argentiferous) and blende. The enclosing rock is a felspathic porphyry. There has been some good silver ore extracted from this mine, and 1½ tons 81 ozs. of silver and 1·05 ozs. of gold per ton were sent to England. Samples from this lode assayed 284·33 ozs. of silver and 4·50 ozs. of gold. It is a promising lode.

The Golden Crown Mine (lease No. 89) is on another lode with a bearing near north and south. There was a vein near the surface very rich both in silver and gold, samples from which assayed over 800 ozs. of silver and 9 ozs. of gold per ton, but the vein did not continue down or in length. There is a shaft down on the lode 74 feet, at which point the lode is 6 inches wide and still carries a little silver. There is also some work done in open trench and drives which has intersected other veins, all of which carry a little silver and gold. This is a very interesting mine and well worthy of investigation. The enclosing rock is felspathic porphyry.

The Nil Desperandum is a large lode bearing near north and south, with a dip west. This reef was worked ten years since for gold, and many shafts sunk on it, some to a depth of 90 or 100 feet, and over a distance of quite half a mile, and from the claim now in possession of Hanson (lease No. 147) a good bunch or patch of gold was obtained close to the surface. Hanson has now got out a little gold stone from this claim.

The adjoining claim north (lease No. 150) is being successfully worked for gold and silver, by Messrs. Hall & Co. There was a shaft put down in this claim during the old working 30 feet, and about fourteen months since the waste heap of debris lying on the surface was found to contain a large quantity of silver ore, which assayed 130 ozs. of silver per ton. Thus the presence of silver was not detected in the former working. Mr. Hall on opening the mine found a nice branch of silver ore about 8 inches wide, on the foot wall of the large reef; he also commenced to sink the shaft, and cut a vein of gold which he has been working for some months with fair results. The shaft was put down to 90 feet on the large reef and cut some veins of silver ore, but at this depth the lode took a sharp dip and became disordered, and divided into a number of small branches. Mr. Hall has opened two or three other shafts on shallow ground with pretty good results. The ore occurs in pockets or bunches in this lode, but the work done is too superficial to enable me to venture an opinion on its value or prospects. The lode is large and masterly, and in depth this may prove a valuable mine.

The Happy Valley (leases Nos. 51, 148, and 137) is a large quartz reef on which there have been several shafts put down and a good deal of work done, and I am informed that some gold was taken from it nine or ten years since, I have seen some good specimens of gold from this reef, and have assayed samples from it which have yielded 8 ozs. of lead and 70 ozs. of silver per ton. The outcrop of this reef can be traced for a long distance traversing a syenitic rock; its bearing is 30° east of north, and dip to the west.

The Copenhagen lode (lease No. 29) has a bearing 35° west of north and east of south, and was worked many years since for gold, but during the present working of Boorook nothing has been done on this lode. I have seen some of the lode stone on surface, but it is not of a congenial character for silver, and I could not detect any gold, but judging from the amount of work done, no doubt patches of gold were found here. From the description which I have received of this lode, I think it to be a converging vein and not rich in gold.

The Mariners lode I believe to be a continuation north of the counter vein cut in the Golden Age, and presents the same feature of having fossiliferous shale on the west side and clay slate on the other. There is a little silver in the lode, but not sufficient to pay.

The Oriental lode (leases Nos. 67 and 68) is from 6 to 18 inches wide, and carries a little gold throughout. There is a small vein of oxide of iron at surface, which assayed from 3 to 5 ozs. of gold per ton, but it does not continue down.

On the Curran lode (lease No. 58) there is a shaft down 35 feet; on the back of lode there is a long deep trench and drive, and also a shaft down 18 feet vertical. This was begun with the intention of striking the lode at 60 or 70 feet, but unfortunately the work was suspended. This is a lode about 10 inches wide, and has a most promising aspect, and has produced some good silver ore. In the bottom of the shaft it is disordered and broken into small veins, &c.; its bearing is 40° west of north and dip east. The enclosing rock is somewhat similar to that of the Golden Age.

The Leviathan (lease No. 142) is a large lode 2 or 3 feet thick, bearing 30° west of north, and carrying a little silver. There is a shaft down 40 feet.

There are a large number of other veins discovered in the Boorook district, almost all of which carry a little silver.

About 3 miles in a northerly direction there is another system of veins, and a little work has been done on two of them, viz., the Alderman and Woolshed lodes. From the former some good samples of silver have been obtained, and in the latter there is a shaft down 42 feet on the lode, and a drive 16 feet from which a fair quantity of good ore has been obtained. 1½ tons treated by Mr. Horton yielded over 30 ozs. of silver per ton, and only 5 ozs. in tailings. A parcel of 7 tons treated by Mr. Onus yielded 18 ozs. per ton. There is a little native and chloride of silver, but the greater part is a sulphuret of silver. The lode is strong and has a congenial appearance for silver, and I think it probable that the lode will improve as it gets deeper. There is a shaft 20 feet deep on the same lode in the Nevada claim, and is of the same character as in the latter mine. The bearing is 30° north of west, and the Alderman is 30° south of west. This a very interesting district and well worthy of being explored. There are a great many lodes in the district.

It will be perceived from the above description that there are large numbers of lodes in the Boorook district, all of which carry more or less silver, and that very little has been done in the development of the various mines. Hitherto all the work has been of a superficial character; the deepest shafts (excepting the Golden Age) are only 80 or 90 feet deep, and under the present system of working it will take a long time to develop the field. The working out of the surface ores and spending large sums of money in erecting reduction works, even before it is known if there are ores to treat, cannot be too strongly condemned. It would be far better to put down a few moderately cheap shafts to test the lodes, and if they should prove rich in depth, the permanency of the field as a silver-mining district would be established, and this would induce capitalists to come forward and erect reduction works on the most scientific principles for the extraction of silver, and sufficiently large to purchase and treat all the ore of the district, and paying for the silver at so much per ounce as per assay. This would suit the miners far better than for each party to put up a reduction plant simply to serve the purpose of testing the value of their ore, and before they know if there is any silver to extract; and even where they have silver, the want of capital and a knowledge of metallurgy must in the majority of cases lead to failure. To erect reduction works to test the value of ore is rather an expensive method, when it can be done much more effectually by simple assay; but I find as a rule, the colonial miner has no confidence in assaying or science generally, but, as a gentleman told me a few days since (and who is of great mining pretension), in this country we prefer to work by the "rule of thumb," and find it gives the best results.

I think this a promising district for silver, but capital is required for its development. During the last twelve months over 30,000 ounces of silver have been returned from the Golden Age Mine, and near

2,000 ounces from the Addison lode, Simmons and Donaldson's claim, and 500 ounces from prospecting claim. In the treatment of the Golden Age ore, only 5 ounces of silver per ton were left in the tailings, extracting at one operation from 80 to 85 per cent. of the silver as per assay. This is very good for the pan process, and will bear comparison with any other district where the pan process is in operation. The sulphide ores from the Golden Age will be very refractory to treat, in consequence of the presence of so much sulphur, arsenic, and sulphide of zinc; but I have ascertained from laboratory experiments that the silver can be extracted effectually, if not by the pan process, by another process of amalgamation far superior in its working and results; but it will require capital, and that is a commodity we sadly lack in Boorook. At present there is not much activity here, and only three or four claims in which work is being done, and the population has decreased.

Remarks on the Treatment of Silver Ores.

The metallurgist, in the treatment of silver ores, has to be guided in the method or process he adopts for the extraction of the silver by a variety of circumstances. 1st, by the nature and quality of the ore from which he has to extract the silver. 2nd, the resources of the country, such as fuel, water-power, price of labour, material, such as timber, &c., distance from railways, roads, rivers, seaports, means of obtaining machinery, price at which re-agents can be obtained, &c., &c. Von Patera's process for the extraction of silver is undoubtedly the best for a country where it is difficult to obtain machinery, or where the silver is contaminated with copper and other base metals. This method is in successful operation in two or three places in the State of Siñora, Mexico, but in a modified form. A friend of mine, who is superintendent of one of these works, tells me that they extract by this process 75 per cent. of the silver, but find it difficult to obtain a perfect chlorination, and on this the success of the process depends.

Of late years our American friends have made a great stir about the pan process. I saw silver extracted by a similar process twenty-six years since, in an improved arrester, and with results quite as good as they obtain in California, but it was abandoned, as we could not afford to lose 25 per cent. of our silver. The reason why the pan process became so popular in Nevada is easy of explanation. When silver was first discovered in California, there were few persons who understood the metallurgy of silver. They tried many methods, but with little success; they also tried the Friberg or barrel process, but also failed, or obtained but indifferent success, as this process required a knowledge of metallurgy and other scientific attainments, and a long practical experience in working the process, which they did not possess; and as soon as they made the accidental discovery that silver ores could be reduced in pans, and with but little knowledge of metallurgy, they embraced that process in preference to all others. But a process by which only 70 to 75 per cent. of the silver can be obtained cannot be called a perfect or even a good process; for my own part I look on it as a most destructive and wasteful one, and certainly it is a process that I would never work if I could possibly avoid it. The pan process has the following advantages:—1st. It requires but little skill or metallurgical knowledge to work. 2nd. They will go through a large quantity of ore. 3rd. The plant is not expensive, and free milling ores may be crushed wet. But against this, we have the enormous waste of from 25 to 30 per cent. of the silver, which counteracts all other advantages.

Were I going to erect a reduction works for the treatment of Boorook silver ores, I would certainly select the Friberg improved process, which is the process *par excellence* for the treatment of dry * silver ores, and particularly when it has to be chlorinized; and indeed I think it preferable to submit almost all ores to chlorination, for even the natural chlorides and iodides will yield their silver more freely and with better results after a short chlorination. I may mention here that, at the large reduction works of Messrs. John Taylor & Sons, at the La Constante, Spain, we extracted for many years 1½ tons of fine silver per month, and during the last twelve years' working I extracted more silver from the ore than represented by assay, and that after paying for the silver absorbed by cupits which were all assayed to ascertain the absorption. These works were the largest and most perfectly arranged reduction works in the world. We had sixty barrels at work. These works were established in 1846, and worked until 1876, or over thirty years, during which time over 15,000,000 ounces of fine silver were extracted, and it served as a school for improved amalgamation, both to Mexico and to California, and all Europe. The barrel process requires an expensive plant, and is more expensive than pans for working, but then we have the immense advantage of extracting 30 per cent. more of the silver, which renders barrel amalgamation a far more economical and perfect process, and a process in which every chemical change is understood, and can be followed in detail from the commencement to the conclusion of the operation, and it is only by doing this that perfect results can be obtained. There are only few metallurgists who have had the opportunity of studying this process in all its details, and the chlorination of the ores has not been sufficiently studied, and as a rule, this delicate and important operation is left almost entirely in the hands of unskilled workmen, whereas the success of the barrel process depends entirely on the perfect chlorination of the ores. The Boorook ores will all require chloridizing below 70 or 80 feet in depth, and dry crushing will be necessary; therefore the barrel process is the best for this district. I can treat by this process ores containing 160 ounces of silver per ton, and extract assay results at one operation, and ores of 400 and 500 ounces per ton can be treated successfully by giving the residue or tailings a second treatment. But I do not hesitate to remark that the barrel process can only be successfully worked by men who thoroughly understand its various operations and chemical changes, and who have had long experience in the working of the process.

The best and cheapest method for the treatment of the argentiferous pyrites from the Golden Age Mine would be by smelting with lead ores, but that cannot be done here, for reasons which it is unnecessary to mention, and until more is seen of this mine it would not be wise to spend much money in the erection of works, for as yet only one shaft has penetrated 60 feet into the rich ore, and though it has opened up and proved a moderately large extent of very valuable ground, the permanency of the mine will depend *on the lode continuing rich in depth*, which at present there is every indication of its doing, as the bottom of No. 2 shaft is richer in silver than any other part of the lode. There has been about 5 tons of the sulphide ores from the Golden Age sent to England for sale, and should the result be favourable large quantities can be sent away at once.

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* Free from copper, lead, &c.

Finally, I am favourably impressed with Boorook as a silver-mining district, but capital is required for its development, and there has not been sufficient deep work done to justify my giving an opinion with regard to its future. I enclose with this a plan and section of the workings in the Age Mine, and will forward a box of samples from the principal lodes as soon as possible, with list of assays, &c., &c.

The following description of the number of reduction works which have been erected on Boorook will, I think, fully illustrate all that I have written on the folly of putting up works before it is known if there are ores to treat.

Horton and Funnell, two steam-engines of 14-horse power, three-head battery, four Wheeler's pans, Rordan separator, &c.

Hutchison and McGregor, one steam-engine 10-horse, three-head battery, one Wheeler's pan, &c., &c.

Moffatt & Co., one 10-horse engine, two Wheeler's pans, one ten-head battery with separators, &c., &c.

Messrs Hull & Co., one 20-horse power engine, a fifteen-head battery, two Denny's pans, &c., &c.

Messrs Dennis & Co., one 8-horse engine, three-head battery, three Wheeler's pans, &c., &c.

Mr. Miller, one 25-foot water-wheel, five-head battery, eight barrels, Chilian mill, and various other appliances.

Thus it will be seen there are no less than six reduction works in a field where, up to the present, there is but one mine which can be depended on to supply mineral. The works of Hutchison & Co. and Moffatt & Co. are now partially dismounted.

I have, &c.,
BENJAMIN DAVEY,
Metallurgist and M. E.

Boorook Silver Mines, January 25th, 1881.

The following is a list of assays of ores from the silver mines at Boorook, made by Mr. Benjamin Davey, Metallurgist and Mining Engineer, of Boorook, and kindly furnished by him to this department.

No. of Samples.		Silver. per Ton. ozs.	cs.	Gold. per Ton. ozs.	cs.
1.	Golden Age, chloride of silver, 70 feet deep	240	50	2	00
2.	,, ,, 70 ,,	658	55	7	80
3.	,, ,, 60 ,,	136	10	0	95
4.	,, ,, 50 ,,	225	60	1	75
5.	,, ,, 50 ,,	196	30	1	84
6.	,, ,, 40 ,,	490	00	3	25
7.	,, ,, 40 ,,	175	33	1	25
8.	,, ,, 55 ,,	360	25	2	10
9.	,, ,, 60 ,,	112	50	0	80
10.	,, ,, 70 ,,	185	40	1	80
11.	,, ,, 70 ,,	192	85	1	70
12.	,, ,, 60 ,,	52	25	0	50
13.	,, hard nodule, from counter vein	192	10	1	00
14.	,, ,, ,,	128	15	0	90
15.	,, sulphide of lead and blende, containing	145	00	0	50
16.	,, argentiferous pyrites, from No. 1 shaft	136	75	1	00
17.	,, ,, ,, ,, ,,	102	25	0	90
18.	,, ,, ,, ,, ,,	89	10	0	75
19.	,, ,, ,, from No. 2 shaft, 84 feet deep	241	02	0	85
20.	,, ,, ,, blende, and lead, No. 2 shaft, 130 ft. deep	382	25	3	20
21.	,, ,, ,, ,, ,, 135 ,,	295	10	2	35
22.	,, ,, ,, ,, ,, 135 ,,	323	45	2	76
23.	,, ,, ,, ,, ,, 125 ,,	310	20	2	60
24.	,, ,, ,, ,, ,, 125 ,,	316	50	2	65
25.	,, ,, ,, ,, ,, 130 ,,	268	38	2	00
26.	,, ,, ,, ,, ,, 145 ,,	285	20	2	50
27.	,, ,, ,, ,, ,, 125 ,,	163	15	1	45
28.	,, ,, ,, ,, ,, 125 ,,	173	40	1	48
29.	,, ,, ,, and blende, No. 2 shaft, 130 ft. deep	302	25	2	55
30.	,, ,, ,, in shale ,, 135 ,,	273	75	2	50
31.	,, ,, ,, ,, ,, 130 ,,	241	10	2	50
32.	,, ,, ,, ,, ,, 110 ,,	78	25	0	50
32.*	,, ,, ,, ,, ,, 110 ,,	55	62	0	38

No. of Samples.		Silver. per Ton.		Gold. per ton.	
		ozs.	cs.	ozs.	cs.
33.	Golden Age, argentiferous pyrites, in shale, No. 2 shaft, 100 ft. deep	172	12	1	60
34.	,, ,, ,, ,, ,, 140 ,,	137	75	1	40
35.	,, ,, ,, ,, ,, 145 ,,	483	85	3	50
36.	,, ,, ,, from 70-ft. drive	282	95	2	75
37.	,, ,, ,, ,,	145	80	1	25
38.	,, ,, ,, from shaft, 135 ft. deep	458	75	3	80
39.	Addison Lode, chloride of silver (lease No. 34), 30 ft. deep	135	65	2	30
40.	,, ,, ,, 20 ,,	356	20	5	10
41.	,, ,, ,, 25 ,,	76	25	0	60
42.	Addison lode, chloride and sulphide of silver (lease No. 34), 25 ft. deep	125	12	1	10
43.	,, ,, ,, ,, 25 ,,	65	70	0	60
44.	,, sulphide of silver ,, 30 ,,	45	50	0	50
45.	,, ,, ,, 20 ,,	272	10	2	55
46.	,, ,, ,, 25 ,,	125	30	2	75
47.	,, ,, (lease No. 32) 30 ft. deep	241	30	5	05
48.	,, ,, ,, average of	352	15	7	20
49.	Golden Crown, chloride and sulphide, visible gold	816	10	8	50
50.	Grand Junction Mine	110	75	1	25
51.	,, ,,	218	15	2	60
52.	,, ,,	85	90	0	95
53.	,, ,, contain carbonate of lead	28	30	...	
54.	,, ,,	201	25	2	40
55.	,, ,,	32	50	0	35
56.	,, ,,	158	55	1	78
57.	,, ,, chloride of silver and lead	110	17	1	25
58.	Nil Desperandum Lode—Mr. Hall's Mine	130	00	1	25
59.	,, ,, ,,	175	18	1	50
60.	Curran's Lode, chloride of silver	120	95	0	45
61.	Oriental Lode, gold in oxide of iron	1	25	3	10
62.	Woolshed Lode ; those samples range from 100 ozs. to	424	80	1	75
63.*	,, chloride, with a little sulphide	776	80	3	12
63.	Alderman Lode	56	25	0	35
64.	Addison Lode (lease No. 33)	6	50	Traces.	
65.	Hurley's Lode, pyrites and galena in quartz	14	20	Traces.	
66.	,, ,, ,,	16	00	0	20
67.	Golden Age, argentiferous pyrites and blende, 135 ft. deep	351	30	2	95
68.	,, ,, ,, in shale 140 ,,	285	20	2	45
69.	,, ,, ,, and blende, 125 ,,	320	15	2	70
70.	,, ,, blende, not assayed	...		...	

It is of course much to be regretted that the development of these valuable lodes should be retarded by lack of skill, experience, and capital on the part of the owners of the mines ; but when it is taken into account that this branch of mining is quite new to this Colony, and that silver ores are most difficult of treatment by any but experts, the great wonder is that so much has been done towards proving the value of the lodes at Boorook by gentlemen possessing but limited means and appliances, and but little experience. Much of the success is probably due to the skill of Mr. Davey, but the energy and perseverance displayed by the pioneers of this branch of mining merit the highest praise.

Mr. Warden Graham, in his report on the Boorook Silver Mines, says—" The chloride ores have now run out at the Golden Age Mine, and work is almost suspended till the sulphides can be successfully treated." Tailings now being treated average 16 ozs. per ton, showing that the treatment of the chloride ores has been more or less imperfect. He also says—" A parcel of four tons of sulphide ore has been sent to England to test the market." If the result be satisfactory, the ore may possibly be sent to England for sale, but it is to be hoped the proprietors of the mines will be enabled to treat the ore on the ground, as the cost of carrying the ore to the seaboard will be a very serious charge upon the products of these mines, and must seriously lessen the profits of the proprietors. The immediate effect of exporting the ore will perhaps be to induce greater activity in working the mines, as it will save the miners the serious expense of procuring appliances and erecting works; but there will be considerable risk in sending large quantities of ore a long distance at great expense, seeing that it may possibly not realize a profit. Mr. Warden Graham says—"There is no doubt the sulphide ores are very rich, and increase in richness as they get deeper." The assays of argentiferous blende made by Mr. Davey on the mine give from 300 ozs. per ton at 125 feet in depth to 700 ozs. per ton at 140 feet.

The Warden of the Bathurst district reports the discovery of a lode said to be rich in silver at Mitchell's Creek.

The Inspector of Mines reports the existence of silver at Grenfell and near Queanbeyan, and galena at Glen Innis, Cooma, Yass, and Grenfell.

The Mining Registrar at Burrowa reports land taken up at Bookham to mine for silver and lead, and that the prospects are good.

Land has also been taken up at Araluen for silver-mining.

At Wagonga, in the southern district, some strata 10 feet in thickness are said to have been found 90 feet above sea-level within 200 feet of the beach, containing quicksilver, and which upon trial gave four grains to the dish.

The Cinnabar works in the Mudgee District are at present idle.

The following assays of silver ores have been made by Mr. Dixon during the year 1880:—

Silver Ores.

141 (1). Stone from Nambucca containing iron pyrites and mispickel, contained—Silver, 11 ozs. 13 dwts. 5 grs. per ton; gold, 10 grs. per ton.

142 (5). Quartz with mispickel much stained by oxide of iron, from Macleay River, contained—Silver, 40 ozs. 4 dwts. 5 grs. per ton; gold, 14 grs.

143 (6). Quartz with mispickel which constituted about one-third of the sample from Nambucca, Macleay Heads, contained—Silver, 2 ozs. 18 dwts. 10 grs. per ton; gold, 10 grs. per ton.

144 (11). Galena with chalco-pyrites, blue and green carbonates of copper, and a little cassiterite, from Darby's Run, near Tingha, contained—Silver, 12 ozs. 16 dwts. 10 grs. per ton; gold, 9 grs. per ton; lead; 26·16 per cent.; copper, 7·72 per cent.; tin, 1·81 per cent.

145 (19). Quartz from the Golden Lion Claim, near Glen Innes, contained—Silver, 4 dwts. 10 grs. per ton; gold, traces.

146 (21). Quartz with a little galena from near Bathurst, containes—Silver, 5 ozs. 7 dwts. 14 grs. per ton; gold, 10 grs. per ton.

147 (22). Quartz with galena from Bathurst, contained—Silver, 9 ozs. 15 grs. per ton; gold, traces; lead 24·91 per cent.

148 (23). Quartz and mispickel from the Bellinger River, contained—Silver, 4 ozs. 6 dwts. 19 grs. per ton; gold, none.

149 (24). Similar to the last and from the same place, contained—Silver, 7 ozs. 8 dwts. per ton; gold, traces.

150 (30). Quartz with mispickel from Nobby Point, Port Macquarie, contained—Silver, 1 oz. 1 dwt. 14 grs. per ton; gold, traces.

151 (31). Quartz with iron pyrites and mispickel, from the Macleay and Nambucca River, contained—Silver, 5 ozs. 4 dwts. per ton; gold, 10 grs. perton.

152 (33). Galena from Brooke's Creek, Upper Gundaroo, containing a trace of copper, contained—Silver, 23 ozs. per ton; gold, none; lead, 72·58 per cent.

153 (34). Brecciated quartz and slate with finely disseminated galena, from Humewood, near Yass, contained—Silver, 2 ozs. 13 dwts. 5 grs. per ton; gold, traces; lead, 51·89. per cent.

154 (35). Minutely crystalline galena with quartz, from Humewood, near Yass, contained—Silver, 4 ozs. 3 dwts. 14 grs.; gold, traces; lead, 61·84 per cent.

155 (42). Quartz with a little yellow mica, from near Goulburn, contained—Silver, 14 grs. per ton; gold, traces.

156 (43). Similar to the last, but with a little galena, and from the same place, contained—Silver, 5 dwts. 5 grs. per ton; gold, traces.

157 (44). Similar to the last, but having more galena, from the same place, contained—Silver, 1 oz. 19 dwts. 5 grs. per ton ; gold, traces.

158 (63). Quartz with mispickel and iron pyrites, from the Macleay River, contained—Silver, 19 dwts. 5 grs. per ton; gold 14 grs. per ton.

159 (64). Drusy and crystalline quartz with minutely disseminated mispickel, from Macleay River, contained—Silver, 2 ozs. 2 dwts. 19 grs. per ton ; gold, 10 grs. per ton.

160 (75). Quartz with mispickel, from Madden's claim, Macleay River, contained—Silver, 6 ozs. 7 dwts. 14 grs. per ton ; gold 19 grs. per ton.

161 (76). Slate and quartz with mispickel, iron pyrites, and a little micaceous iron ore from the same claim as the last, contained—Silver, 2 ozs. 9 dwts. 5 grs. per ton ; gold, 10 grs. per ton.

162 (77). Slate with a little crystalline quartz and mispickel, from the same claim, contained—Silver, 12 dwts. per ton ; gold, 10 grs. per ton.

163 (81). This and the seven specimens following it are all from the Macleay River. It consisted of white crystalline quartz with mispickel and traces of galena, and contained—Silver, 2 ozs. 15 dwts. 12 grs. per ton ; gold, traces.

164 (82). Quartz with arsenical and iron pyrites, contained—Silver, 2 ozs. 18 dwts. 19 grs. per ton ; gold, traces.

165 (83). Similar in appearance to the last, contained—Silver, 8 ozs. 9 dwts. 20 grs. per ton ; gold, 10 grs. per ton.

166 (84). Quartz stained deep red by ferric oxide, accompanied by mispickel, contained—Silver, 1 oz. 12 dwts. 6 grs. per ton ; gold, traces.

167 (85). Quartz containing both iron pyrites and mispickel, yielded—Silver, 18 dwts. 10 grs. ; gold, traces.

168 (86). Mispickel and iron pyrites in quantity with traces of galena in quartz, gave—Silver, 18 dwts. 10 grs. per ton ; gold, traces.

169 (87). Crystalline quartz with mispickel and traces of galena, contained—Silver, 12 ozs. 14 dwts. 19 grs. per ton ; gold, 10 grs. per ton.

170 (88). Stibnite contained traces only of silver and—Gold, 2 dwts. 10 grs. per ton.

171 (94). Quartz from Rock Vale, 20 miles from Armidale, yielded—Silver, 3 dwts. 5 grs. per ton ; gold, traces.

172 (99). Quartz, with mispickel, from Nambucca, contained—Silver, 2 ozs. 14 dwts. 10 grs. per ton ; gold, 2 dwts. 10 grs. per ton.

173 (103). Stone from the Nil Desperandum Reef, Boorook, consisting of quartz with bright red gossan, a little iron pyrites and silver as chloride, yielded—Silver, 82 ozs. 18 dwts. 19 grs. per ton.

174 (105). Quartz, with a small quantity of galena and traces of chalco-pyrites from Burrowa, gave—Silver, 8 dwts. 10 grs. per ton ; gold, traces.

175 (106). Quartz, with galena from Caloolah, near Trunkey, contained—Silver 11 ozs. 2 dwts. 10 grs. per ton ; gold, 19 grs. per ton.

176 (113). Quartz with mispickel and clay from Mount Grosvenor, near Peel, contained—Silver, 6 ozs. 9 dwts. 14 grs. per ton ; gold, traces. Another sample from the same place also containing mispickel, yielded neither gold nor silver.

177 (133). Galena and mispickel in quartz from the Macleay River, contained—Silver, 36 ozs. 6 dwts. 10 grs. per ton ; gold, traces ; lead, 32·79 per cent.

178 (134). Grey and white quartz with mispickel and iron pyrites from Fish River Creek, contained—Silver, 3 dwts. 5 grs. per ton ; gold, traces.

179 (135). Magnetite with copper glance and pyrites from Mitchel's Creek, contained—Silver, 7 ozs. 14 dwts. 10 grs. per ton ; gold, 10 grs. per ton ; copper, 10·04 per cent.

180 (137). Brown iron ore and quartz from Boro, contained—Silver, 14 dwts. per ton ; gold, traces.

181 (148). Galena with a little copper pyrites from Inverell, gave—Silver, 6 ozs. 11 dwts. 14 grs. per ton ; gold, 19 grs. per ton ; lead, 57·28 per cent.

182 (160). Mispickel from Port Macquarie, yielded—Silver, 3 dwts. 5 grs. per ton ; gold, none.

183 (163). Quartz with a little iron pyrites and mispickel from Kempsey, gave—Silver, 4 dwts. 5 grs. per ton ; gold, traces.

184 (168). Stone from the Armidale district, being ferruginous rotten quartz, contained—Gold, 14 grs. per ton ; silver, 1 oz. 17 dwts. 5 grs. per ton.

185 (169). Quartz with a little mispickel from the Kempsey district, contained—Silver, 7 dwts. 5 grs. per ton ; gold, traces.

186 (170). Quartz from Kempsey, sent to be assayed for silver and gold, but contained neither.

187 (180). Crystalline quartz with mispickel from Oberon, contained—Silver, 2 ozs. 1 dwt. 10 grs. per ton; gold, 1 dwt. 14 grs. per ton.

188 (190). Galena in large nodules from Menindi, yielded—Silver, 21 ozs. 14 dwts. 11 grs. per ton ; lead, 67·03 per cent.

189 (191). Minutely crystalline galena from Menindie, gave—Silver, 31 ozs. 10 dwts. 14 grs. per ton ; lead, 83·78 per cent.

190 (206). Quartz and a breccia containing minute quantities of blue and green carbonates of copper, chalco-pyrites, native copper, and galena, from unknown locality, gave—Silver, 2 ozs. 4 dwts. 19 grs. per ton ; gold, traces.

191 (210). Quartz, with a little galena and mispickel from Warrel Creek, contained—Silver, 17 ozs. 5 dwts. 14 grs. per ton; gold, traces.
192 (217). Iron pyrites with a little mispickel in quartz from Port Macquarie, contain—Silver 5 dwts. 19 grs. per ton; gold, traces.
193 (218). Stone from New Reef, Port Macquarie, sent to be assayed for gold and silver, but contained neither.
194 (219). Dark-coloured quartz from a reef between Lismore and Balina, gave traces only of silver.
195 (227). Stone from Port Macquarie, consisting of quartz with iron pyrites and mispickel, contained—Silver, 5 dwts. 5 grs. per ton; gold, traces.
195 (228). This sample consisted of quartz with a little galena from Chichester River, and was sent to be assayed for gold, but was found to contain principally silver. It yielded—Silver, 19 ozs 19 dwts. 5 grs. per ton; gold, 1 dwt. 5 grs. per ton.
196 (231). Slightly ferrigunous quartz from the cap of a supposed silver lode, Mitchel's Creek. It contained—Silver, 42 ozs. 12 dwts. 14 grs. per ton; gold, 3 dwts. 6 grs. per ton.
197 (232). From the same lode but deeper, consisted of quartz with minutely crystalline pyrites, gave—Silver, 38 ozs. 1 dwt. 3 grs. per ton; gold, 1 dwt. 14 grs. per ton.
198 (233). From the same lode but from a greater depth than the last, which it resembled in appearance, gave—Silver, 442 ozs. 2 dwts. 19 grs. per ton; gold, 4 dwts. 19 grs. per ton. The silver in all these three samples was partially present as chloride.
199 (237). Grey-coloured quartz from the Queanbeyan district containing a little mispickel, gave—Silver, 18 dwts. 19 grs. per ton.
200, 201, 202, & 203 (243, 244, 245, 246). Of these samples from Meadow Flat the first two consisted chiefly of brown hæmatite, the last two of rotten quartz. They were sent to be assayed for gold and silver, but only No. 201 gave a weighable bead, which was equal to 1 dwt. 10 grs. of both metals, chiefly silver.

For assays of silver ores previously made, see the Annual Report of the Department for 1879, pages 42 to 44.

IRON.

THE quantity of iron made during the year 1880—namely, 1,200 tons of pig iron, valued at £4 per ton, and 800 tons of bar and rail iron, valued at £10 per ton—exceeds that of previous years, and the value of the output also shows a considerable increase, but of course the output is very small yet compared with the extent and value of our deposits. In view of the fact that only one Company is engaged in the manufacture of iron, and that very serious difficulties attend the initiation of a new industry, the progress made must be regarded not only as satisfactory but as most creditable to those gentlemen whose enterprise and energy have established the Eskbank Ironworks.

The following analyses of iron ores have been made by Mr. Dixon during the year 1880:—

IRON ORES.

204 (72).—Iron ore from south-east corner No. 170, Stanwell Park, near Coal Cliff, was a red purple-coloured stone of rather unpromising appearance, and as it was found to contain 60 per cent. of silica I did not consider it worth further examination. It is rather a ferruginous shale than an ironstone. The following analysis was afterwards made by Mr. White in my laboratory and under my superintendence, and shows that even if the silica was in much smaller proportion it would be of little value as an iron ore, from the large percentage of phosphorus it contains.

	Analysis.	
Silica	59·86	
Ferric oxide	26·85	=18·79 per cent. iron.
Alumina	2·50	
Magnesia	·73	
Phosphoric acid	1·27	
Water	8·17	
Alkaline traces of sulphur and loss	·62	
	100·00	

205 (73).—Iron ore from south-east corner of Newcombe's land, near Coal Cliff, was similar to the last, and contained 65·26 per cent. of silica; the same remarks therefore apply to it.

206 to 211 (122 126).—The following samples were sent from Wollongong, and were found to contain—

206.	Oxide of iron	10·65 per cent.	=metallic iron	7·45
207.	Do.	12·84 do.	do.	8·58
208.	Do.	15·01 do.	do.	10·50
209.	Do.	14·56 do.	do.	10·17
210.	Do.	17·26 do.	do.	12·08
211.	Do.	11·46 do.	do.	8·02

These specimens were therefore rather ferruginous shales than ironstones, and were not considered worthy of a further investigation, as they would be useless as a source of the metal.

212.—Magnetite from Wallerawang.

	Analysis.	
Water	2·16	
Ferric oxide	64·01	Metallic iron 51·73
Ferrous oxide	8·99	
Manganese	Traces	
Alumina	2·75	
Lime	3·75	Total lime, 11·28
Fluoride of calcium	10·68	
Magnesia	·41	
Phosphoric oxide	Trace	
Sulphur	None	
Silica	6·70	
	99·45	

This ore is not a true magnetite, although it contains a considerable percentage of magnetic oxide. It is remarkable as containing within itself all the materials required for successful smelting.

213.—Accompanying this magnetite a kind of garnet rock containing much iron is found, of which the following is an analysis :—

Water	4·55	Soluble in acid, 31·70
Ferric oxide	23·14	
Alumina	4·31	
Lime	4·25	
Magnesia	Traces	
Phosphoric oxide	None	
Sulphur	None	
Ferric oxide	20·77	Insoluble in acid, 65·59
Alumina	·85	
Lime	7·75	
Silica	34·22	
	99·84	
Metallic iron	30·73	

This rock is therefore quite rich enough to be worked as an ore of iron, and poorer ores are smelted in many places ; in the present case it will doubtless be found particularly valuable, from its silicious nature, for mixing with the hæmatite and clayband found in the same locality, and of which analyses are to be found below. Both of these ores contain an excessive quantity of alumina, which would render the slags or cinder produced in smelting very refractory, and it could only be kept in a proper condition of fluidity by the addition of some such silicious material as we have here at hand.

214 (153).—Iron ore from Wallerawang, marked "hæmatite," was actually a brown iron ore, and had a specific gravity of 3·572.

	Analysis.	
Water	15·25	Soluble in acid, 93·56.
Carbonic acid	Traces	
Ferric oxide	75·52	
Ferrous oxide	1·01	
Manganese oxide	Traces	
Alumina	·97	
Lime	·19	
Magnesia	·21	
Phosphoric oxide	·38	
Sulphur	·03	
Alumina	2·11	Insoluble in acid, 6·36.
Ferrous oxide	Traces	
Silica	4·25	
	99·92	
Metallic iron	52·66	

This is a good sample of brown iron ore and is remarkably free from sulphur, and contains but little phosphorus.

215 (159).—Iron ore from Wallerawang, marked "clay band," was actually a brown iron ore or a hydrated hæmatite. It has a curious concretionary structure containing numerous cavities filled with yellow ochre in some cases, in others with a dark grey matter scarcely soluble in acid. Specific gravity, 3·255.

	Analysis.	
Water with traces of organic matter ...	12·00	Soluble in acid, 75·45.
Ferric oxide ...	59·87	
Ferrous oxide ...	2·26	
Manganese oxide ...	Traces	
Alumina ...	·51	
Lime ...	·16	
Magnesia ...	·17	
Phosphoric acid ...	·44	
Sulphur ...	·04	
Alumina ...	7·45	Insoluble in acid, 24·66.
Ferrous oxide ...	Traces	
Silica... ...	17·21	
	100·11	
Metallic iron ...	43·5	

This is also a good iron ore, but the high ratio of alumina to silica in both these would render the slags somewhat refractory unless silica was added to the charge.

216 (178).—Magnetite with peroxide of manganese, from unknown locality, contained :—

Iron (metal) ...	40·69	per cent.
Manganese (metal) ...	18·33	,,

This ore appears suitable for the manufacture of speigeleisen.

217 (194).—Analysis of brown hæmatite from Gosford, Brisbane Water.

Water ...	10·73
Ferric oxide ...	60·99
Alumina ...	·82
Lime ...	Traces
Magnesia ...	·41
Phosphoric oxide ...	·03
Sulphur ...	Traces
Alumina ...	1·84
Silica ...	25·10
	99·92

218 (195).—This specimen was sent marked "red hæmatite," but was not a true ore of this description, and as it came from the same locality as the last; it was to be described more properly as a brown hæmatite which had been partially calcined, probably by the action of bush fires. It contained—

Water ...	7·39
Ferric oxide ...	41·24
Alumina ...	1·71
Lime ...	Traces
Magnesia ...	Traces
Phosphoric oxide ...	·02
Sulphur ...	Traces
Alumina ...	3·65
Silica ...	46·44
	100·45

219 (235).—Iron ore from Clarence Siding, Blue Mountains, consisted of red and brown hæmatite in approximately equal quantities, having pieces of quartz interspersed through it.

Analysis.		
Water ...	4·98	Soluble in acid, 44·11.
Ferric oxide ...	37·89	
Alumina ...	1·21	
Phosphoric oxide...	0·3	
Sulphur ...	Traces	
Ferric oxide ...	1·23	Insoluble in acid, 56·02.
Alumina ...	2·24	
Silica ...	52·55	
	100·13	
Metallic iron ...	27·38	

This ore being very silicious would not be of value by itself, but would do well for smelting with the aluminous ores of Wallerawang, of which analyses are given above.

LEAD.

VERY little has yet been done towards developing the deposits of ore which are known to occur in various parts of this Colony, but there is some slight indication of a desire to enter upon this branch of mining, and therefore the following assays are republished:—

[Annual Report, 1879, page 45.]

The following assays have been made for the Department during 1880:—

LEAD ORES.

220 (11). Galena with chalco-pyrites, blue and green carbonates of copper, and a little cassiterite, from near Tingha, contained—Lead, 26·16 per cent.; copper, 7·92 per cent.; tin, 1·81 per per cent; silver, 12 ozs. 16 dwts. 10 grs. per ton; gold, 9 grs. per ton.

221 (22). Galena in quartz from Bathurst contained—Lead, 29·91 per cent.; silver, 9 ozs. 15 grs. per ton; gold, traces.

222 (33). Galena from Brooke's Creek, Upper Gundaroo, containing a trace of copper, and gave—Lead, 72·58 per cent.; silver, 23 ozs. per ton; gold, none.

223 (39). Brecciated quartz and slate, with finely disseminated galena, from Humewood, near Yass, contained—Lead, 51·89 per cent.; silver, 2 ozs. 13 dwts. 5 grs. per ton; gold, traces.

224 (35). Minutely crystalline galena in quartz, from the same locality as the last, contained—Lead, 61·84; silver, 4 ozs. 3 dwts. 14 grs. per ton; gold, traces.

225 (36). Galena in fluorspar, with traces of green carbonate of copper, from Woolgarlo, contained—Lead, 31·23 per cent.; silver, 1 oz. 10 grs. per ton; gold, none. This ore would be very useful for smelting in admixture with silicious ores, as the fluorspar would act as a flux to the silica.

226 (66). Galena, with green carbonate of copper and copper and iron pyrites, from Cope's Creek, contained—Lead, 59·64 per cent.; copper, 7·08 per cent. This mineral was examined for silver, of which it contained traces only, and gold and tin, which were absent.

227 (100). Galena, with blende, and a trace of chalco-pyrites, from Mitchel's Creek, near Bathurst, contained—Lead, 16·70 per cent.; zinc, 19·67 per cent.; gold, 1 oz. 1 dwt. per ton; silver, 3 dwt. 10 grs. per ton.

228 (148). Ore from Inverell, consisting of galena with a little copper pyrites, gave—Lead, 57·28 per cent.; silver, 6 ozs. 11 dwts. 14 grs. per ton; gold, 19 grs. per ton.

229 (133). Galena, accompanied by mispickel in quartz, from the Macleay River, contained—Lead, 32·79 per cent.; silver, 36 ozs. 6 dwts. 10 grs. per ton; gold, traces.

230 (179). Galena, from unknown locality, contained—Lead, 70·22 per cent.; silver, 4 ozs. 12 dwts. 19 grs. per ton. This was a bright clear galena, in small crystals.

231 (190). Large nodules of galena, from Menindie, gave—Lead, 67·03 per cent.; silver, 21 ozs. 14 dwts. 11 grs. per ton.

232 (191). Minutely crystalline galena, from the same locality as the last, yielded—Lead, 83·78 per cent.; silver, 31 ozs. 10 dwts. 14 grs. per ton.

ANTIMONY.

OUR deposits of antimony are now beginning to attract considerable attention, and although the quantity of metal exported during 1880 does not very largely exceed that of 1879, there are reasonable grounds for expecting a considerable increase during the current year.

During the year 1880 some valuable deposits were discovered and opened at Gara Falls, near Armidale. The vein in one mine varies from 10 to 16 inches, and the ore is said to yield 50 per cent. of antimony and 1 oz. 2 dwts. of gold per ton. The ore from another mine is said to yield 66 per cent. of antimony.

Antimony lodes have also been discovered at Hargrave's Falls, and at Aberfoil, in the same district.

The lodes in the Macleay district are still being worked.

At Crudine, in the Bathurst district, the Inspector of Mines reports the occurrence of pure ore in blocks, but no defined lode.

The following assays have been made by Mr. Dixon during the year 1880 :—

Antimony Ores.

233 (26). A minutely crystalline stibnite, with a little oxide, and traces only of iron and lead, contained—Antimony, 56·41 per cent. ; gold and silver, 19 grs. per ton. This sample was from near Uralla, and the precious metals consisted chiefly of gold.

234 (96). Stibnite from Gara, 12 miles from Armidale, gave—Antimony, 57·59 per cent. ; gold and silver, none.

235 (166). Stibnite in quartz, from the Paterson district, contained—Antimony, 23·87 per cent. ; gold, 2 dwts. 10 grs. per ton ; silver, traces.

236 (207). Stibnite in quartz, from Bungonia, contained—Antimony, 28·42 per cent.

237 (234). Stibnite from Kempsey district. This sample was very irregular, there being some ore of good quality and well crystallized, but at least half of it consisted of vein-stuff, slightly impregnated with the sulphides of antimony and iron, by which it was coloured black. It contained—Antimony, 21·88 per cent. If the pure ore was separated from the vein-stuff, which could easily be done, it would be of value, but in the condition in which it was sent it would be almost valueless.

ASBESTOS.

The export of this mineral has been commenced, and though the quantity is not yet large, there is an apparent inclination to devote some attention to the development of these deposits which may lead to a considerable increase.

The Mining Registrar at Bathurst reports the discovery of asbestos at King's Plains, and the application for a lease of the land to work the same.

Asbestos has also been found at Sewell's Creek.

Work has unfortunately been suspended at the asbestos mine at Gundagai.

BISMUTH.

The Inspector of Mines reports a lode 8 inches wide, at Silent Grove ; also, metallic bismuth, near the Gulf, in the Vegetable Creek district. He also reports that a large lode is being worked near Glen Innes, and at the Elsmore mine, on the M'Intyre River, near Inverell.

The Warden at Glen Innes says, at King's Gate, 18 miles east of Glen Innes, from a lode 6 to 8 feet wide, samples of native bismuth have been taken, weighing from one to two pounds. Four and a half tons of the ore have been sent to London.

The following assays were made during 1880, by Mr. Dixon, F.I.C. :—

Bismuth Ores.

238 (97). This sample was sent from Glen Innes as supposed to contain bismuth. The black mineral in the quartz was found to be molybdenite, and the yellowish powdery substance molybdic oxide, whilst bismuth was absent. It contained gold amounting to 1 oz. 5 dwts. 5 grs. per ton.

239 (146). Marked bismuth ore, from New England, consisted chiefly of quartz, but contained—Bismuth, 3·91 % : gold, traces only.

MANGANESE.

The Mining Registrar at Braidwood reports the discovery of a lode at Fairy Meadows, containing ore which on assay was found to contain 70 % of manganese.

The following assays were made during 1880, by Mr. Dixon:—

Manganese Nickel Cobalt.

242 (40). Oxide of manganese, with much ferric oxide and some micaceous iron from Boro, was sent to be examined for cobalt, but contained only minute traces of that metal. The mineral contains too much iron to be of value as an oxide of manganese ore, but may become of value at some future time as a source of speigeleisen for making Bessemer steel.

243 (139). Black oxide of manganese, from 34 miles south of Goulburn, which was sent to be examined for cobalt. It contained mere traces of that metal, but proved to be a rich specimen of oxide of manganese, as it contained 77·2 per cent of available oxide ($Mn O_2$).

244 (178). Peroxide of manganese and magnetite, from unknown locality, contained—Manganese, 18·33 %; iron, 40·69 %.

For analysis previously made, see Annual Report for 1879, pages 46 and 47.

ZINC ORES.

The following assays were made by Mr. Dixon, F.C.S., &c., during 1880:—

240 (100).—Blende, galena, and traces of copper pyrites, from Mitchel's Creek, near Bathurst, yielded:—

Zinc	19·67 per cent.
Lead	16·70 ,,
Gold	1 oz. 1 dwt. 0 grs. per ton.
Silver	3 dwts. 10 grs. ,,

No. 241 (102).—Quartz with blende, iron pyrites, and a little galena, from twelve miles from Goulburn, contained:—

Zinc	10·11 per cent.
Gold	4 dwts. 10 grs. per ton.
Silver	3 oz. 0 ,, 5 ,, ,,

SLATE.

Slate quarries have been opened at Gundagai, from which it is said an abundant supply of good slates can be obtained.

Some good specimens have been obtained in the Bathurst district, and there is a probability of quarries being opened there.

Slates of good quality are also obtained near Moruya.

LIMESTONE, WATERS, GUANOS, &c., &c., &c.

The following analyses were made by Mr. Dixon, F.C.S., F.I.C., during the year 1880:—

245 (129).—A grey crystalline limestone from Wollongong contained:—

Carbonate of lime	74·28	Soluble in acid, 80·10.
Carbonate of magnesia	·82	
Alumina	1·46	
Oxide of iron	3·12	
Phosphoric oxide	·42	
Alumina	5·80	Insoluble in acid, 16·49.
Silica	10·69	
Organic matter and water	3·71	
	100·30	

This limestone, on burning, would give a brownish-coloured hydraulic lime.

246 (155).—A white crystalline limestone, from Wallerawang, gave on analysis :—

Carbonic acid	42·33
Lime	53·42
Magnesia	·56
Ferric oxide	·75
Alumina	Traces
Phosphoric oxide	·11
Silica	2·90
	100·07

WATERS.

Three samples of water from the Currawang Copper Mine were sent for analysis with special reference to their poisonous action on the fish in Lake George, and were therefore only examined with regard to the metals in solution. The metals were present as sulphates, and are stated below as anhydrous salts.

247 (203).—Water from the creek contained :—

Sulphate of copper	1·12	grains per gallon.
,, zinc	16·98	,,
,, iron	·43	,,

248 (204).—Water from the working shaft contained :—

Sulphate of copper	17·67	grains per gallon.
,, zinc	53·54	,,
,, iron	1·42	,,

249 (205).—Water from the old shaft contained :—

Sulphate of copper	6·42	grains per gallon.
,, zinc	7·20	,,
,, iron	·98	,,

These waters would necessarily be poisonous to fish, and, flowing into a lake without an outlet, would ultimately render the whole of the water poisonous.

GUANOS.

The following guanos were samples brought from Lord Howe's Island, and were only examined sufficiently to ascertain whether there was any reasonable probability of their being shipped profitably, and therefore the phosphoric acid only was determined. Only one of them proved to be of any value, and in it the carbonate of calcium is given from a carbon dioxide determination.

No.		Phosphoric Acid.	Tricalcic Phosphate.	Calcium Carbonate.
250	(12.)	3·96 per cent	4·58 per cent.	
251	(13.)	21·01 ,, ,,	44·14 ,, ,,	
252	(14.)	31·49 ,, ,,	69·08 ,, ,,	4·54
253	(15.)	4·41 ,, ,,	9·66 ,, ,,	
254	(16.)	35·0 ,, ,,	76·0 ,, ,,	
255	(17.)	15·96 ,, ,,	35·15 ,, ,,	

Most of the samples were rich in ferric oxide, which is not of common occurrence in the other guano deposits in the South Sea Islands.

VARIOUS MINERALS.

256 (108). This mineral was supposed to be meerschaum, and was sent as such from 40 miles from Tamworth. It gave on analysis :—

Water	12·84
Silica	80·56
Alumina	4·15
Oxide of iron	1·77
Carbonate of calcium	·31
Carbonate of magnesium	·21
Alkaline salts and loss	·16
	100·00

The mineral was of a dead white colour with a few black specks ; its hardness was about 1, being easily scratched with the nail, and readily giving a streak on cloth ; it floated on water, but after being soaked for some time it had a specific gravity of 1·21 ; it adhered to the tongue, was infusible, and gave a slight blue colour when moistened with nitrate of cobalt and heated. All these characters agree with the mineral cimolite, which occurs on the Richmond River and elsewhere, and has been sent to Sydney as meerschaum; the analysis, however, showed too much silica to agree with this mineral, and on examining it with the microscope, it was found to be almost entirely composed of the siliceous frustules of diatomacea. There appeared to be two species, a square and discoidal, but not being well acquainted with diatomacea, I submitted a sample to Mr. Pedley, who informed me that it is almost entirely composed of a species of Melosira, closely resembling *M. arenaria.* The members of this family are very deceptive, being composed of cylinders joined end to end, and the valves present very different appearances according to the direction in which they are viewed. As Melosira is a fresh water diatom the deposit is probably of that origin, and may contain other species at different depths.

The mineral, if crushed and washed from the grains of sand which are contained in it in small quantity, would be an excellent polishing powder for the softer metals, and it would be valuable as an absorbent of nitroglycerine in the manufacture of lithofracteur which is now carried on in Melbourne.

Qualitative Analysis.

257 (28). A bituminous substance from the Bland district, supposed to be an excrementitious deposit formed by wallabies, contained a considerable amount of ash, principally clay, with a trace of phosphoric acid. It did not contain ammonia or ammoniacal salts, but was highly nitrogenous, so that when heated with soda-lime large quantities of ammonia accompanied by methylamine and other organic bases were evolved.

258 (65). A mixed mineral from the Wallerawang district, contains silica and sulphides of lead, copper, zinc, iron, and traces of silver, arsenic, antimony, and cadmium.

259 (90). Stone from Kempsy sent to be assayed for gold, silver, and zinc, contained none of these metals, but consisted chiefly of red and yellow oxides of iron, accompanied by heavy spar (sulphate of barium).

260 (114). Stone from Currabublah, a greenish-coloured mineral, was examined qualitatively for gold, silver, and the heavy metals, but was found to contain nothing of value, the only heavy metal present being iron.

261 (188). Stone from Cootamundra, was examined qualitatively, and found to consist of crystallized peroxide of manganese and a little magnetite in quartz, and as it would be of little value unless freed from the last ingredient it was not thought necessary to examine it further.

Summary.

I have the honor, in conclusion, to submit the following summary of the quantity and value of the various minerals produced to the end of the year 1880. As previously stated, the result of the year's operations shows in the aggregate a decrease upon that of 1879; but, with the exception of coal and shale, there has been an increase in the value of the output of all other minerals.

The aggregate value of our minerals has now reached the sum of £52,714,317 7s. 2d.

Aggregate value of Minerals the produce of New South Wales, to the 31st December last is—

	Quantity.	Value.			Total Value.		
		£	s.	d.	£	s.	d.
Quantity and value of gold raised prior to 1st January, 1880	8,956,951·93 ozs.	33,335,800	16	7			
Quantity and value of gold raised during 1880	118,600·52 ,,	441,543	7	7			
Totals....	9,075,552·45 ozs.	33,777,344	4	2	33,777,344	4	2
Quantity and value of silver raised prior to 1st January, 1880	578,106 ozs.	143,501	0	0			
Quantity and value of silver raised during 1880	91,419 ,,	21,878	0	0			
Totals..............	669,525 ozs.	165,379	0	0	165,379	0	0
Quantity and value of coal raised prior to 1st January, 1880	20,640,075 tons	11,036,722	16	5			
Quantity and value of coal raised during 1880	1,466,180 ,,	625,336	11	7			
Totals.....	22,106,255 tons	11,662,059	8	0	11,662,059	8	0

AGGREGATE value of Minerals—*continued.*

	Quantity.	Value.			Total Value.		
		£	s.	d.	£	s.	d.
Quantity and value of shale raised prior to 1st January, 1880	194,189 tons	495,574	0	0			
Quantity and value of shale raised during 1880	19,201 ,,	44,724	15	0			
Totals..............	213,390 tons	540,298	15	0	540,298	15	0
Quantity and value of tin exported prior to 1st January, 1880..........	Ingots...... 34,988 tons 2 cwt. Ore .... 12,920 ,, 15 ,,	3,144,237	0	0			
Quantity and value of tin exported during 1880	Ingots...... 5,476 ,, 6 ,, Ore .... 682 ,, 6 ,,	471,337	0	0			
Totals..............	....	3,615,574	0	0	3,615,574	0	0
Quantity and value of copper exported prior to 1st January, 1880	Ingots ...... 33,306 tons Ore & regulus 2,941 ,,	2,494,437	0	0			
Quantity and value of copper exported during 1880	Ingots ...... 5,262 ,, 10 cwt. Ore & regulus 131 ,, 18½ ,,	364,059	0	0			
Totals..............	....	2,858,496	0	0	2,858,496	0	0
Quantity and value of iron raised prior to 1st January, 1880.........	*2,018 tons	36,935 17,216	0 0	0 0			
Quantity and value of iron raised during 1880	2,322 ,, 6 cwt.	15,335	0	0			
Totals..............	4,340 tons 6 cwt.	69,486	0	0	69,486	0	0
Quantity and value of antimony exported prior to 1st January, 1880	Ore............ 260 tons 8 cwt. Regulus...... 142 ,, 0 ,, Metal......... 62 ,, 0 ,,	10,178	0	0			
Quantity and value of antimony exported during 1880	Ore............ 87 ,, 6 ,, Metal......... 12 ,, 13 ,,	1,652	0	0			
Totals..............	....	11,830	0	0	11,830	0	0
Quantity and value of lead exported prior to 1st January, 1880............	111 tons 5 cwt.	2,510	0	0			
Quantity and value of lead exported during 1880	27 ,, 14 ,,	890	0	0			
Totals..............	138 tons 19 cwt.	3,400	0	0	3,400	0	0
Quantity and value of asbetos exported during 1880	12 tons 8 cwt.	323	0	0	323	0	0
Quantity and value of mixed minerals exported prior to 1st January, 1880	333 tons	9,332	0	0			
Quantity and value of mixed minerals exported during 1880	21 ,,	795	0	0			
Totals..............	354 tons	10,127	0	0	10,127	0	0
Total	....	.... £			52,714,317	7	2

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* Prior to 1st January, 1878, the quantity of iron is not recorded, but simply the value.

I have, &c.,
HARRIE WOOD,
Under Secretary for Mines.

Department of Mines, Sydney, 16th March, 1881.

Table showing approximately the number of Miners employed in Gold-mining, the Quantity of Gold won, the area of ground worked, and the value of Machinery, in the Colony of New South Wales, during the year 1880.

(Compiled from Mining Registrars' Returns.)

District and Division.	Alluvial-miners.		Quartz-miners.		Total Miners.	Quantity of Gold.			Price of Gold per ounce.		Value of Gold won.	Alluvial Ground worked.	Quartz Reefs proved to be auriferous.	Value of Machinery.
	Europeans.	Chinese.	Europeans.	Chinese.		Alluvial.	Quartz.	Total.	From	To				
	No.	No.	No.	No.	No.	ozs. dwts. grs.	ozs. dwts. grs.	ozs. dwts. grs.	s.	s.	£ s. d.	Square miles		£
Bathurst District—														
Bathurst Division......	60	20	40	10	130	220 0 0	100 0 0	320 0 0	60/	75/	1,120 0 0	...	...	...
Trunkey ,, ...	59	38	32	...	129	2,217 10 0	825 10 18	3,043 0 18	75/	76/	11,411 5 0	...	...	5,350
Tuena ,, ...	60	27	22	...	109	692 0 0	404 10 0	1,096 10 0	74/	...	4,057 1 0	...	4	4,900
Carcoar ,, ...	8	...	128	...	136	262 0 0	4,854 19 1	5,116 19 1	59/7	...	15,224 0 0	...	...	4,250
Cowra ,, ...	60	...	...	...	60	30 0 0	....	30 0 0	70/	75/	110 0 0	...	...	...
Rockley ,, ...	18	24	8	...	50	260 0 0	....	260 0 0	78/6	79/	1,027 0 0	30	...	260
Orange ,, ...	...		...	...	...	48 18 18	....	48 18 18	...	...	*4,334 17 3	...	...	...
Mitchell's Creek Division.	18	12	28	...	58	377 0 0	411 0 0	788 0 0	50/	74/	2,366 0 0	160	13	1,500
Oberon Division	...	...	...	...	...	303 0 0	....	303 0 0	...	...	1,060 0 0	...	...	...
	283	121	258	10	672	4,410 8 18	6,595 19 19	11,006 8 13	50/	79/	40,710 3 3	190	17	16,260
Tambaroora and Turon District—														
Hill End Division......	...	...	201	178	379	....	7,299 10 14	7,299 10 14	...	...	28,468 5 0	...	...	51,899
Sofala ,, ...	200	202	24	...	426	4,481 9 18	566 15 0	5,048 4 18	74/	75/6	18,678 9 6	20	13	7,700
Ironbarks ,, ...	170	50	100	...	320	624 0 0	974 4 11	1,598 4 11	75/	76/3	5,194 6 4	115	22	3,000
	370	252	325	178	1,125	5,105 9 18	8,840 10 1	13,945 19 19	74/	76/3	52,341 0 10	135	35	62,599
Mudgee District—														
Gulgong Division	428	18	...	...	446	7,511 2 4	....	7,511 2 4	76/	78/6	29,512 10 0	...	...	...
Mudgee ,, ...	350	40	4	...	394	4,734 6 12	....	4,734 6 12	72/6	78/6	17,872 1 6	...	...	...
Wellington ,, ...	50	12	5	...	67	1,100 0 0	1,145 15 15	2,245 15 15	72/	76/	8,310 0 0	...	2	7,000
Windeyer ,, ...	140	120	20	...	280	2,550 0 0	51 4 0	2,601 4 0	77/	...	10,014 12 5	350	20	2,910
Hargraves ,, ...	87	112	...	...	199	3,000 0 0	....	3,000 0 0	...	...	11,700 0 0	20	...	...
	1,055	302	29		1,386	18,895 8 16	1,196 19 5	20,092 8 7	72/	78/6	77,409 3 11	370	22	9,910

£4,149 12s. 8d. from pyrites.

TABLE showing approximately the number of Miners, *&c.—continued.*

District and Division.	Alluvial-miners.		Quartz-miners.		Total Miners.	Quantity of Gold.			Price of Gold per ounce.		Value of Gold won.	Alluvial Ground worked.	Quartz Reefs proved to be auriferous.	Value of Machinery.
	Europeans.	Chinese.	Europeans.	Chinese.		Alluvial.	Quartz.	Total.	From	To				
	No.	No.	No.	No.	No.	ozs. dwts. grs.	ozs. dwts. grs.	ozs. dwts. grs.	s.	s.	£ s. d.	Square miles.	No.	£
LACHLAN DISTRICT—														
Forbes Division ...	120	...	...	...	120	828 0 0	...	828 0 0	70/6	77/6	3,115 10 0	120	20	11,660
Parkes ,, ...	350	2	60	...	412	3,005 0 0	2,000 0 0	5,005 0 0	70/0	75/0	18,143 2 6	20	8	3,850
Cargo ,, ...	24	...	15	...	39	250 0 0	150 0 0	400 0 0	73/0	75/3	1,460 0 0	3	15	2,000
Grenfell ,, ...	24	...	42	...	66	216 3 3	1,075 18 15	1,292 1 18	75/0	77/6	4,800 0 0	...	...	1,500
Young ,, ...	328	27	...	...	355	1,865 9 14	...	1,865 9 14	75/0	77/6	7,088 18 0	...	...	...
Temora ,, (Baker)	4,800	...	200	...	5,000	9,162 10 0	5 3 0	9,167 13 0	77/0	...	32,503 14 0	10	20	1,500
	5,646	29	317	...	5,992	15,327 2 17	3,231 1 15	18,558 4 8	70/0	77/6	67,111 4 6	153	63	20,510
SOUTHERN DISTRICT—														
Braidwood Division ...	150	50	...	...	200	1,512 12 13	...	1,512 12 13	73/0	75/0	5,700 0 0	10	...	10,000
Araluen ,, ...	328	81	6	...	415	6,460 0 0	153 0 0	6,613 0 0	67/6	76/6	24,970 0 0	...	...	22,840
Major's Creek ,, ...	56	9	48	...	113	1,310 8 12	337 0 0	1,647 8 12	72/0	76/0	6,126 11 10	...	...	3,800
Little River ,, ...	104	87	16	...	207	2,863 0 0	...	2,863 0 0	77/6	...	11,094 2 6	36	40	2,205
Nerrigundah ,, ...	22	100	...	...	122	906 8 16	...	906 8 16	78/6	80/0	3,624 14 8	2½	...	200
Nowra ,, ...	...	...	73	...	73	...	1,679 5 0	1,679 5 0	66/0	...	5,541 10 0	...	...	...
Bombala ,, ...	25	125	...	...	150	834 12 12	...	834 12 12	76/3	...	3,186 15 3	...	...	...
Nerriga ,, ...	42	18	...	...	60	830 0 0	...	830 0 0	75/0	76/6	3,130 0 0	...	...	...
Wagonga ,, ...	95	5	...	...	100	631 13 7	...	631 13 7	73/0	75/6	2,242 5 4	...	...	600
Montreal ,, ...	400	...	...	...	400	1,800 0 0	...	1,800 0 0	77/0	78/3	7,054 0 0	...	...	...
Gunning ,, ...	...	...	...	...	...	20 0 0	...	20 0 0	68/0	70/0	70 0 0	...	...	500
	1,222	475	143	...	1,840	17,168 15 12	2,169 5 0	19,338 0 12	66/0	80/0	72,739 19 7	48½	40	40,145
TUMUT AND ADELONG DISTRICT—														
Adelong Division ...	200	50	350	...	600	12,016 9 9*	...	12,016 9 9	72/6	78/0	47,226 5 9	100	100	100,000
Tumut ,, ...	39	1	4	...	44	1,209 15 9	381 14 7	1,591 9 16	70/0	77/6	6,167 0 5	12	1	200
Tumbarumba ,, ...	209	20	21	...	250	1,288 18 9	1,316 0 0	2,604 18 9	76/6	77/6	11,370 5 9	25	10	34,340
Yarrara ,, ...	18	20	3	...	41	250 0 0	...	250 0 0	74/0	...	925 0 0	...	...	3,500
Kiandra ,, ...	45	120	...	...	165	1,500 0 0	...	1,500 0 0	73/11	...	5,550 0 0	...	...	...
Albury ,, ...	80	...	26	...	106	200 0 0	113 4 0	313 4 0	73/6	80/0	1,191 0 0	3	3	800
	591	211	404	...	1,206	16,465 3 3	1,810 18 7	18,276 1 10	70/0	80/0	72,429 11 11	140	114	138,840

* Quartz and alluvial not separately specified.

TABLE showing approximately the number of Miners, &c.—*continued.*

District and Division.	Alluvial-miners.		Quartz-miners.		Total Miners.	Quantity of Gold.			Price of Gold per ounce.		Value of Gold won.	Alluvial Ground worked.	Quartz Reefs proved to be auriferous.	Value of Machinery.
	Europeans.	Chinese.	Europeans.	Chinese.		Alluvial.	Quartz.	Total.	From	To				
	No.	No.	No.	No.	No.	ozs. dwts. grs.	ozs. dwts. grs.	ozs. dwts. grs.	s.	s.	£ s. d.	Square miles.	No.	£
PEEL AND URALLA DISTRICT—														
Armidale Division ...	59	5	...	...	64	240 3 2	....	240 3 2	74/	75/6	879 18 9	...	...	...
Uralla ,, ...	136	48	...	...	184	820 3 19	....	820 3 19	76/9	...	3,147 10 4	...	...	...
Nundle ,, ...	84	66	93	...	243	1,203 19 0	1,516 4 0	2,720 3 0	73/9	...	10,030 11 0	...	...	4,100
Scone ,, ...	...	...	...	...	...	....	373 0 0	373 0 0	...	...	1,283 10 0	...	...	...
Barraba ,, ...	42	2	8	...	52	487 7 12	46 10 0	533 17 12	70/	71/	1,866 0 0	10	3	1,500
Bingera ,, ...	70	30	4	...	104	1,680 0 0	....	1,680 0 0	70/	63/6	6,132 0 0	20	2	600
Glen Innes ,, ...	15	...	...	...	15	300 0 0	....	300 0 0	...	...	1,125 0 0	...	...	...
Walcha ,, ..	...	31	...	...	31	....	422 9 14	422 9 14	...	...	1,503 10 7	...	...	...
	406	182	105	...	698	4,731 13 9	2,358 3 14	7,089 16 23	70/	75/6	25,968 0 8	30	5	6,200
NEW ENGLAND AND CLARENCE DISTRICT—														
Tenterfield Division...	19	...	...	...	19	156 0 0	....	156 0 0	50/	55/	322 0 0	...	...	250
Solferino (Lionsville) Division ...	35	7	9	...	51	286 2 0	265 15 14	551 17 14	65/	71/	1,897 15 8	20	21	1,350
Boorook Division ...	94	23	...	...	117	2,341 0 0	....	2,341 0 0	70/	...	8,193 10 0	...	...	9,200
Dalmorton ,, ...	33	1	4	...	38	170 0 0	....	170 0 0	70/	77/	624 15 0	308	64	5,000
	181	31	13	...	225	2,953 2 0	265 15 14	3,218 17 14	50/	77/	11,038 0 8	328	85	15,800
HUNTER AND MACLEAY DISTRICT—														
Copeland Division ...	40	...	210	...	250	639 9 22	7,733 12 2	8,373 2 0	59/	75/	28,258 15 0	...	51	11,000
Wingham ,, ...	...	...	4	...	4	....	13 0 0	13 0 0	...	...	50 0 0	...	...	...
Dungog ,, ...	...	...	...	...	...	....	591 0 0	591 0 0	...	...	1,773 0 0	...	...	...
Bulladelah ,, ...	...	...	...	...	...	....	468 6 0	468 6 0	...	...	1,756 2 6	...	...	...
	40	...	214	...	254	639 9 22	8,805 18 2	9,445 8 0	59/	75/	31,837 17 6	...	51	11,000
NOT WITHIN A MINING DISTRICT—														
Grafton	12	...	...	...	12	82 14 15	....	82 14 15	70/	...	289 11 2	...	...	...
Jerong.....	40	...	...	...	40	20 10 0	....	20 10 0	75/	...	76 17 6	...	...	...
	52	...	...	...	52	103 4 15	....	103 4 15	70/	75/	366 8 8	...	...	...

Summary.

(Compiled from Mining Registrars' Reports.)

TABLE showing approximately the number of Miners employed in Gold-mining, the quantity of Gold won, the area of Ground worked, and the value of Machinery, in the Colony of New South Wales, during 1880.

District and Division.	Alluvial-miners.		Quartz-miners.		Total Miners.	Quantity of Gold.			Price of Gold per ounce.		Value of Gold won.	Alluvial Ground worked.	Quartz Reefs proved to be auriferous.	Value of Machinery.
	Europeans.	Chinese.	Europeans.	Chinese.		Alluvial.	Quartz.	Total.	From	To				
	No.	No.	No.	No.	No.	ozs. dwts. grs.	ozs. dwts. grs.	ozs. dwts. grs.	s.	s.	£ s. d.	Square miles.	No.	£
Bathurst District.......	283	121	258	10	672	4,410 8 18	6,595 19 19	11,006 8 13	50/	79/	40,710 3 3	190	17	16260
Tambaroora and Turon District.	370	252	325	178	1,125	5,105 9 18	8,840 10 1	13,945 19 19	74/	76/3	52,341 0 10	135	35	62599
Mudgee District.........	1,055	302	29	...	1,386	18,895 8 16	1,196 19 15	20,092 8 7	72/	78/6	77,409 3 11	370	22	9910
Lachlan ,,	5,646	29	317	...	5,992	15,327 2 17	3,231 1 15	18,558 4 8	70/	77/6	67,111 4 6	153	63	20510
Southern ,,	1,222	475	143	...	1,840	17,168 15 12	2,169 5 0	19,338 0 12	66/	80/	72,739 19 7	48½	40	40145
Tumut and Adelong District.	591	211	404	...	1,206	16,465 3 3	1,810 18 7	18,276 1 10	70/	80/	72,429 11 11	140	114	138840
Peel and Uralla District.	406	182	105	...	693	4,731 13 9	2,358 3 14	7,089 16 23	70/	75/6	25,968 0 8	30	5	6200
New England and Clarence District.	181	31	13	...	225	2,953 2 0	265 15 14	3,218 17 14	50/	77/	11,038 0 8	328	85	15800
Hunter and Macleay District.	40	...	214	...	254	639 9 22	8,805 18 2	9,445 8 0	59/	75/	31,837 17 6	...	51	11000
Not within a Mining District.	52	...	...	...	52	103 4 15	......	103 4 15	70/	75/	366 8 8	...	...	...
	9,846	1,603	1808	188	13,445	85,799 18 10	35,274 11 15	121,074 10 1	50/0	80/0	451,951 11 6	1,394½	432	321264

TABLE showing approximately the number of Miners employed in Mining for Minerals other than Gold, Coal, or Shale, at some of the principal Mines, the quantity of Minerals won during the year 1880, and the value of same, and the value of Plant.

Locality.	Miners employed.	Quantities.				Value.	Value of Machinery.	Remarks.
		Tin.	Copper.	Iron.	Antimony.			
		Tons cwt.	Tons cwt.	Tons.		£ s. d.	£	
Oberon	......	....	427 0	....	....	2,472 0 0	....	Ore. Value estimated.
Bathurst	60	....	769 0	....	....	1,997 0 0	....	Ore.
Tuena	50	....	136 0	....	....	5,440 0 0	3,500	
Rockley	18	....	427 0	....	....	2,602 0 0	....	Ore.
Orange	4	....	37 10	....	....	110 0 0	4,000	Ore.
Cobar	......	....	2,569 0	....	....	154,140 0 0	....	Smelted.
Burrowa	10	....	50 10	....	....	3,030 0 0	5,000	Price estimated.
	142	....	4,416 0	....	....	160,791 0 0	12,500	
Tingha	1,500	1,722 0	....	....	....	72,324 0 0	....	Ore.
Glen Innes	202	263 15	....	....	....	11,868 15 0	....	Ore.
Vegetable Creek......	......	3,696 5	....	....	....	166,331 5 0	....	Ore.
Wilson's Downfall ...	458	677 0	....	....	....	29,488 0 0	700	Ore.
	2,160	6,359 0	....	....	....	280,012 0 0	700	
Lithgow (Eskbank)...	50	....	....	2,000	....	12,800 0 0	100	

THE following information has been obtained by the Wardens and Mining Registrars respecting certain parcels of Washdirt which have been puddled, sluiced, or crushed during the year 1880, and the quantity of Gold produced therefrom.

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of Workings.
			Tons	ozs. dwts. grs.	ozs. dwts. grs.	
BATHURST DISTRICT—						
Carcoar Division	Never Budge	The Forest	800	0 6 13·20	262 0 0	100 ft.
	Brown's Creek Gold-mining Co.	Brown's Creek	20,531	0 3 15·58	3,746 8 0	100 ,,
Cowra Division	Taylor & Co.	Wood's Flat	30	1 0 00·00	30 0 0	Surface.
			21,361	0 3 18·74	4,038 8 0	
MUDGEE DISTRICT—						
Hargraves Division	....	Hargraves and Meroo Creek	3,090	0 6 16·00	1,030 0 0	Surface.
LACHLAN DISTRICT—						
Forbes Division	South Lead Gold-mining Co.	South Lead	63	0 8 21·33	28 0 0	247 ft.
	Queen's Lead	Queen's Lead	1,000	0 9 0·00	450 0 0	112 to 130
Parkes Division	O'Donnell	M'Guiggan's	90	0 5 0·00	22 10 0	60 ,, 105
	,,	Tichbourne	118	0 5 0·00	29 10 0	,, ,,
	,,	South M'Guiggan's	155	0 6 0·00	46 10 0	80 ft.
	,,	,,	407	0 5 0·00	101 15 0	100 to 105
	Perry & Co.	Ben Nevis	1,500	0 4 0·00	300 0 0	80 ft.
	M'Intyre & Co.	North Bushman's, Currajong	3,900	0 3 0·00	585 0 0	6 ,, 80
	E. Draper	Reid's Gully, No Mistake	50	0 3 0·00	7 10 0	90 ,, 100
	,,	,,	35	0 3 0·00	5 5 0	20 ,, 100
	Mann's	No Mistake	200	0 3 0·00	30 0 0	100 ,,
	Hocking & Co.	Welcome and Fulton's Lead	1,300	0 4 6·15	276 13 8	40 ,, 80
	Melander's	N. & S. Bushman's	1,100	0 3 0·00	165 0 0	40 ,, 80
Grenfell Division	Gullen and party	Payne's Gully	20	0 4 0·00	4 0 0	60 ,,
	Keir and party	,,	20	0 6 12·00	6 10 0	60 ,,
	Fitch and party	,,	18	0 4 12·00	4 1 0	50 ,,
	Eager and party	,,	40	0 7 0.00	14 0 0	70 ,,
	R. Doyle and party	Seven-mile Gully	200	0 6 0·00	60 0 0	84 ,,
	Bourke and party	,,	180	0 6 0·00	54 0 0	100 ,,
	Parker and party	,,	85	0 5 0·00	21 5 0	84 ,,

Yield of Gold from Wash-dirt—*continued.*

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of Workings.
			Tons	ozs. dwts. grs.	ozs. dwts. grs.	
LACHLAN DISTRICT—*contd.*						
Cargo Division		Gum Flat	1,500	0 3 8·00	250 0 0	
Temora Division	Exhibition	Maloney's Gully, Woodstown	6,500	0 4 0·00	1,300 0 0	70 to 83 ft.
	,,	,, ,,	500	0 2 9·60	60 0 0	46 to 75 ,,
	,,	,, ,,	600	0 6 0·00	180 0 0	30 to 170 ,,
	Parker's	Temora	330	0 6 0·00	99 0 0	15 ft.
	,,	,,	2,207	0 10 0·00	1,103 10 0	72 to 120 ft.
	,,	,,	104	0 5 0·00	26 0 0	152 ft.
	Roberts and party	,,	125	0 10 9·60	65 0 0	
	,,	,,	200	0 10 0·00	100 0 0	
	Foster and party	,,	96	0 6 16·00	32 0 0	
	Various claims	,,	10,800	0 5 22·00	3,200 0 0	
			33,443	0 5 3·82	8,626 19 8	
SOUTHERN DISTRICT—						
Araluen Division	Southern Cross	Araluen	210,000	0 0 3·38	1,480 0 0	35 ft.
Little River Division	Moore & Co.	Little River	800	0 0 12·00	20 0 0	1 to 6 ft.
	Seymour & Co.	Surface Hill	1,000	0 0 12·00	25 0 0	1 to 8 ,,
	Selleck & Co.	Little River	6,000	0 0 6·00	75 0 0	1 to 6 ,,
	Thomas Wisbey	Mosquito Flat	3,200	0 0 9·00	60 0 0	1 to 8 ,,
	Oaken & Co.	Bread Gully	1,300	0 0 11·81	32 0 0	1 to 6 ,,
	Ten-mile Race	Little River	3,000	0 0 8·00	50 0 0	1 to 10 ,,
Major's Creek Division	J. B.	Long Flat	1,000	0 0 5·00	10 8 8	
	J. F.	,,	290	0 1 18·00	25 7 12	
	H. G. & Sons	,,	240	0 4 0·00	48 0 0	
	D. P. & T. W. B.	,,	360	0 2 0·00	36 0 0	
	W. S. & W. F.	,,	500	0 2 0·00	50 0 0	
	H. G. & W. C.	,,	300	0 4 0·00	60 0 0	
	J. B. & Sons	,,	1,500	0 0 17·35	54 4 16	
	W. D. and party	,,	1,300	0 1 0·00	65 0 0	
			230,790	0 0 4·34	2,091 0 12	
PEEL & URALLA DISTRICT—						
Nundle Division	Henderson and party	Mount Pleasant	3,000	0 3 0·00	450 0 0	140 ft.
	J. Rackham	Nundle	500	0 1 12·00	37 10 0	
			3,500	0 2 18·85	487 10 0	

Summary.

QUANTITY of Gold obtained from certain parcels of Washdirt puddled, sluiced, &c., during the year 1880, showing the average yield of Gold per ton.

District.	Quantity.	Average yield of Gold per ton.			Total yield of Gold.		
	Tons	ozs.	dwts.	grs.	ozs.	dwts.	grs.
Bathurst	21,361	0	3	18·74	4,038	8	0
Mudgee	3,090	0	6	16·00	1,030	0	0
Lachlan	33,443	0	5	3·82	8,626	19	8
Southern	230,790	0	0	4·34	2,091	0	12
Peel and Uralla	3,500	0	2	18·85	487	10	0
	292,184	0	1	2·73	16,273	17	20

THE following information has been obtained by the Wardens and Mining Registrars respecting certain parcels of Quartz crushed during the year 1880.

District and Division.	Name of Company.	Locality.	Quantity.		Average yield of Gold per Ton.			Total yield of Gold.			Depth of Workings.
BATHURST DISTRICT—			Tons	cwt.	ozs.	dwts.	grs.	ozs.	dwts.	grs.	
Bathurst Division	Independent Co-operative G. M. Co.	Napoleon Reef, near Glanmire.	60	0	0	4	0·00	12	0	0	28 feet.
	,, ,,	,, ,,	30	0	0	6	16·00	10	0	0	160 ,,
	,, ,,	Mosquito Reef	17	0	0	14	2·82	12	0	0	90 ,,
	,, ,,	Flat Reef	68	0	0	2	1·41	7	0	0	100 ,,
Trunkey Division	Parson's	Pine Ridge	2,600	0	0	1	12·00	195	0	0	Open cutting.
	Sydney	Trunkey Creek	796	0	0	15	20·22	630	10	18	10 to 50 ft.
Tuena Division	Victoria Company	Victoria Flat	150	0	0	10	3·20	76	0	0	200 feet.
	Washington Reef	Junction Point	100	0	0	10	0·00	50	0	0	180 ,,
Carcoar Division	Chandler and party	Belubula River	1,294	0	0	3	1·77	198	17	13	Tunnel.
Mitchell's Creek Division	Brown & Mann	Mitchell's Creek	50	0	0	8	0·00	20	0	0	,,
	Grabham & McCarthy	Dark Corner	49	0	1	0	0·00	49	0	0	30 feet.
	Robert Smith and party	,,	100	0	0	13	2·40	65	10	0	50 ,,
	Small Crushings	,,	150	0	0	14	0·00	105	0	0	....
	Curnow & Sons	,,	90	0	0	12	0·00	54	0	0	35 feet.
	Hurley & Co.	Sunny Corner	75	0	0	6	0·00	22	10	0	Tunnel.
	Brown Brothers	Mitchell's Creek	54	0	0	5	22·22	16	0	0	,,
	Tomlinson & McLean	,,	65	0	0	10	5·53	33	5	0	,,
	T. Hammond	,,	40	0	0	12	0·00	24	0	0	,,
	D. Payitt	Dark Corner	23	0	0	15	0·00	17	5	0	20 feet.
			5,811	0	0	5	11·99	1,597	18	7	

Yield of Gold from Quartz—*continued.*

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per Ton.	Total yield of Gold.	Depth of Workings.
TAMBAROORA AND TURON DISTRICT—			Tons cwt.	ozs. dwts. grs.	ozs. dwts. grs.	
Hill End Division	Star of Peace	Hawkins' Hill	1,100 0	0 10 12·50	578 13 2	
	Krohman's A. G. M. Co.	,,	281 0	2 4 17·72	628 11 12	
	New Caledonian	,,	730 0	0 4 22·35	180 0 0	
	New Monte Christo	,,	169 0	2 5 17·46	386 8 0	
	Paxton's G. M. Co.	,,	73 0	3 0 0·00	219 0 0	
	Patriarch G. M. Co.	,,	224 0	0 10 17·14	120 0 0	
	,,	,,	70 0	3 1 3·42	214 0 0	
Sofala Division	Davis & Mannel	Red Hill	8 10	8 4 16·94	70 0 0	Surface to 50 ft.
	Surface Hill Company	Surface Hill	13 0	2 18 23·53	38 6 18	,, ,,
	Mitchell & Co.	,,	19 0	1 4 9·78	23 3 18	,, 40 ft.
	M. Headly	,,	5 0	1 14 4·80	8 11 0	,, ,,
	McDowall	,,	7 0	1 1 17·14	7 12 0	,, ,,
	Hotter	,,	22 10	0 11 14·40	13 1 0	,, ,,
	Isaacs & Co.	Whalan's Hill	16 0	0 15 1·50	12 1 0	,, 20 ft.
	,,	Big Oakey	42 0	0 18 18·85	39 9 0	,, 50 ,,
	Mini & Co.	,,	18 0	2 2 18·66	38 10 0	,, 60 ,,
	Williamson's	,,	72 0	0 3 21·33	14 0 0	,, 40 ,,
	Jacobs'	Solitary Reef	9 0	1 0 13·33	9 5 0	,, 50 ,,
	Brailey	Bullock Flat	5 0	1 9 14·40	7 8 0	Surface.
Ironbarks Division	Marshall and party	Trickett Reef	130 10	1 0 0·00	130 10 0	
	Boheme's Machine	,,	425 0	0 5 19·08	128 3 0	
	Scott's Machine	,,	263 0	0 14 2·09	185 5 0	
	Boheme's Machine	,,	481 0	0 6 5·01	149 6 11	
			4,183 10	0 15 6·72	3,196 4 13	
MUDGEE DISTRICT—						
Wellington Division	Kaiser No. 2		955 0	0 5 23·24	285 0 0	
	Mitchell's Creek Mine	Lincoln	1,415 0	0 12 0·00	849 0 0	
Windeyer Division	Crystal Palace Company	Eagle Hawke	50 0	0 16 19·20	42 0 0	
			2,420 0	0 9 17·25	1,176 0 0	
LACHLAN DISTRICT—						
Parkes Division	St. Croix and party	Currajong	200 0	0 6 0·00	60 0 0	50 feet
	Dayspring	,,	74 0	0 15 0·00	55 10 0	105 ,,
	Bothwell & Co.	,,	24 0	0 11 0·00	13 4 0	40 ,,
	Hunter and party	,,	128 0	0 9 1·87	58 2 0	60 ,,
	Duggan & Co.	Bushman's Hill	10 0	1 15 5·00	17 12 2	25 ,,
	,,	Currajong	15 0	2 14 17·46	41 0 22	96 ,,
	Little Wonder	Parkes	26 0	0 11 0·00	14 6 0	96 ,,

Yield of Gold from Quartz—*continued.*

District and Division.	Name of Company.	Locality.	Quantity.		Average yield of Gold per ton.			Total yield of Gold.			Depth of Workings.
			Tons	cwt.	ozs.	dwts.	grs.	ozs.	dwts.	grs.	
LACHLAN DISTRICT—*contd.*											
Parkes Division—*contd.*	Bonnie Dundee	Parkes	638	0	0	10	1·92	321	11	6	175 feet
	,, No. 2	,,	62	0	0	19	15·87	60	19	0	145 ,,
	Hale & Co.	Caledonia Hill	90	0	1	2	21·13	102	19	6	40 ,,
	No. 1 Currajong Reef	Currajong	325	0	0	14	12·00	235	12	12	80 to 90 ft.
	Stockman's Reef	Parkes	40	0	0	2	18·00	5	10	0	
Grenfell Division	Campbell and party	Homeward Bound Reef	322	0	0	16	0·00	257	12	0	240 feet
	Mitchell and party	,,	189	0	0	6	0·00	56	14	0	
	Pritchard and party	Outward Bound Reef	36	0	0	3	0·00	5	8	0	80 ,,
	R. Hinchcliffe	Lawson's reef	40	0	1	0	0·00	40	0	0	70 ,,
	Pettit and party	Enterprise lease	120	0	1	8	0·00	168	0	0	170 ,,
	Spencer and party	Payne's Reef	81	0	0	5	0·00	20	5	0	20 ,,
	Main Lead Co.	Main Lead	21	0	0	8	0·00	8	8	0	Surfacing
	O'Brien's Gold-mining Co.	O'Brien's lease	200	0	0	7	6·00	72	10	0	100 feet
	Consol's Lease (sundry parties).	O'Brien's Hill	300	0	0	10	0·00	150	0	0	210 ,,
Cargo Division	Roberts & Thomas	Rise and Shine Reef	8	0	1	11	9·00	12	11	0	
	Nelson & Duff	Homeward Bound	17	10	1	18	8·16	33	12	0	
	Thomas & Clerk	Dalcooth	20	0	1	7	0·00	27	0	0	
	Elder & Co.	,,	8	0	2	7	6·00	18	18	0	
	Elder's Lease	Phœnix	6	0	2	1	16·00	12	10	0	
	Thom and party	Boney's Rocks	23	0	1	0	0·00	23	0	0	
			3,023	10	0	12	12·48	1,892	15	0	
SOUTHERN DISTRICT—											
Araluen Division	Various claims	Bell's Creek	248	0	0	12	8·12	153	0	0	Surface to 70
Shoalhaven (Nowra)	Eureka	Dangera Creek	70	0	0	1	3·42	4	0	0	
	Eclipse	,,	406	0	1	8	13·71	580	0	0	
	Pinnacle	,,	218	0	1	9	8·58	320	0	0	
	Poor Man	,,	141	0	0	6	16·00	47	0	0	
	Pioneer	,,	563	0	0	19	18·03	556	0	0	
	Golden Crown	,,	63	0	0	11	2·66	35	0	0	
	Last Chance	,,	48	0	0	17	4·50	41	5	0	
	Keiller's	,,	16	0	0	15	0·00	12	0	0	
	Homeward Bound	,,	80	0	1	1	0·00	84	0	0	
Little River	Burrell's	Little River	249	0	1	1	18·40	271	0	0	150 feet.
			2,102	0	1	0	0·28	2,103	5	0	

YIELD of Gold from Quartz—*continued.*

District and Division	Name of Company.	Locality.	Quantity.	Average yield of Gold per Ton.	Total yield of Gold.	Depth of Workings.
			Tons cwt.	ozs. dwts. grs.	ozs. dwts. grs.	ft.
TUMUT AND ADELONG DISTRICT—						
Adelong Division	Perseverance G. M. Co...	Old Line of Reef........	796 0	1 5 22·31	1,032 0 0	840
	N. Caledonian ,,	Adelong..................	78 0	1 19 13·46	154 5 18	300
	Union ,,	Victoria Reef...........	73 0	0 17 22·43	65 9 6	428
	Falher & Sons..............	Gap Range	3 10	0 11 11·42	2 0 4	30
	Challenger Co	Adelong	937 0	0 16 21·12	790 16 14	600
	Butterworth and party...	Gap Range..............	40 0	0 14 0·00	28 0 0	35
	Trudgen and party........	Caledonian Reef........	44 0	1 4 15·27	54 4 0	220
Tumbarumba Division......	Peep O'Day G. M. Co....	Ournie.....................	208 0	1 14 18·46	372 0 0	180
	Comstock ,,	,, ...	141 0	2 12 9·87	369 10 0	80
	Thomas Dawson	,, ...	82 0	0 18 4·09	74 10 0	40
Albury Division	Albury G. M. Co...........	Old Nail Can	126 0	0 17 23·23	113 4 0	
			2,520 10	1 4 4·13	3,055 19 18	
PEEL AND URALLA DISTRICT						
Nundle Division.....	J. P. Robertson and party	Bowling Alley Point...	10 0	1 0 0·00	10 0 0	230
	,,	Opossum Reef...........	500 0	0 10 0·00	250 0 0	250
	T. Bakewell and party ...	Brown Stake Reef.....	100 0	1 ·0 0·00	100 0 0	140
	Clarke & Cairns	Black ,, ,, ...	13 0	4 0 0·00	52 0 0	60
	C. B. Anderson and party	,, ,, ,, ...	110 0	1 15 0·00	192 10 0	100
	T. Bakewell and party ...	Christmas Reef..........	150 0	3 0 0·00	450 0 0	40
	G. Bond.........................	Near Foley's Folly......	50 0	0 12 0·00	30 0 0	100
	J. Brayshaw.................	Hanging Rock...........	40 0	1 0 0·00	40 0 0	40
	J. Stanning..................	,, ...	25 0	0 17 0·00	21 5 0	200
	Wheal Prospect Co.........	Foley's Folly...........	40 0	0 18 0·00	36 0 0	500
	R. Morris and party	Black Snake Reef......	56 0	1 10 0·00	84 0 0	60
	H. Edwards and party ...	Spring Creek............	12 0	0 8 0·00	4 16 0	30
	J. P. Robertson and party	Bowling Alley Point...	350 0	0 5 0·00	87 10 0	
	James Fuller and party ..	Moonlight Reef..........	10 0	0 4 0·00	2 0 0	30
	P. Prisk and party	Black Snake Reef.......	16 0	1 17 16·50	30 3 0	40
Barraba Division.............	Fletcher & Co	Crow Mountain.........	65 0	0 5 0·00	16 5 0	65 to 70
	Dyson & Co	Tea-tree Creek	5 0	0 10 0·00	2 10 0	40 to 50
Scone Division................	Williams and party	Fuller's Reef............	335 0	0 19 18·26	331 0 0	......
	....	Simpson's Reef..........	20 0	0 12 0·00	12 0 0	......
	....	Campbell's Reef.........	7 0	0 10 34·28	4 0 0	......
	....	Early Rose Reef........	12 0	0 13 8·00	8 0 0	......
	....	Johnston's Reef.........	5 0	3 12 0·00	18 0 0	......
Walcha	Matheson & Co	Tia Reef	516 0	......	307 9 0	......
			2,447 0	0 17 1·85	2,089 8 0	

YIELD of Gold from Quartz—*continued.*

District and Division.	Name of Company.	Locality.	Quantity.		Average yield of Gold per Ton.			Total yield of Gold.			Depth of Workings.
			Tons	cwt.	ozs.	dwts.	grs.	ozs.	dwts.	grs.	feet.
NEW ENGLAND & CLARENCE DISTRICT—											
Solferino Division............	Private Company..........	Garibaldi	2	5	124	0	10·00	281	6	0	50 to 70
	,, ...	Sir Walter Scott, Cangi	1	0	4	16	0·00	4	16	0	......
Boorook Division............	Lunatic G. M. Co.........	Kangaroo Creek.........	63	0	3	0	0·00	189	0	0	......
			66	5	7	3	10·23	475	2	0	
HUNTER AND MACLEAY DISTRICT—											
Copeland Division	Centennial	Left-hand branch Back Creek	179	0	0	0	13·15	4	18	2	......
	East Mountain Maid		66	0	5	16	5·81	383	12	0	......
	Lady Belmore..............	,,	43	0	3	9	16·46	149	16	12	......
	Rosetta Company	,,	96	0	0	3	21·18	18	12	18	......
	Lady Belmore, No. 1......	,,	24	0	1	14	4·00	41	0	0	......
	Centennial, No. 1 South.	,,	36	0	1	8	21·33	52	0	0	......
	Melbourne	,,	32	0	0	16	21·00	27	0	0	......
	Evening Star	,,	6	10	1	9	6·46	9	10	6	......
	Irwin and party	,,	45	0	0	9	9·60	21	3	0	......
	Lady Belmore..............	,,	91	0	0	15	17·53	71	11	12	......
	Centennial	,,	27	10	3	4	0·00	88	0	0	......
	Town and Country Claim	,,	15	0	0	10	0·00	7	10	0	......
	Saxby and party...........	,,	33	15	1	0	9·95	34	9	0	......
	Thompson and party......	,,	10	0	2	7	0·00	23	10	0	......
	Irwin and party	,,	20	0	0	10	7·75	10	6	11	......
	Lady Belmore..............	,,	29	10	1	0	18·01	61	4	7	......
	Phillips and party	,,	12	10	0	13	14·04	17	0	0	......
	Town and Country Claim	,,	20	0	1	2	13·4	22	11	4	......
	Centennial	,,	23	0	3	0	0·0	69	0	0	......
	Hidden Treasure	,,	70	0	12	0	0·00	840	0	0	......
	Lukey and party	,,	20	0	3	1	4·80	61	4	0	......
	Cameron & Hicks..........	,,	36	0	4	14	10·66	170	0	0	......
	Schlaswick & Co.	Bowman River	12	15	0	1	13·64	1	0	0	......
	Williams & Co.	,, ...	23	10	0	15	7·79	18	0	0	......
	,, ...	,, ...	49	0	1	8	13·71	70	0	0	......
	Procter.......................	,, ...	2	5	0	9	1·33	1	0	9	......
	Williams & Co.	,, ...	14	0	0	7	3·42	5	0	0	......
	Thomas Pearce	,, ...	6	0	0	3	8·50	1	0	3	......
	Germania....................	,, ...	30	0	0	0	8·00	0	10	0	......
	Bank, No. 1.................	,, ...	90	0	0	10	16·05	48	0	5	......
	Bank, No. 2.................	,, ...	66	0	1	9	9·45	97	0	0	......
	Williams & Co.	,, ...	52	10	2	19	10·28	156	0	0	......
	Hughes & Procter	,, ...	15	0	0	10	16·86	8	0	13	......

YIELD of Gold from Quartz—*continued.*

District and Division.	Name of Company.	Locality.	Quantity.		Average yield of Gold per Ton.			Total yield of Gold.			Depth of Workings.
			Tons	cwt.	ozs.	dwts.	grs.	ozs.	dwts.	grs.	feet.
HUNTER AND MACLEAY DISTRICT—*continued.*											
Copeland Division—*continued.*	Queen of Beauty Reef	Bowman River	15	0	0	6	16·33	5	0	5	......
	John Hichardt	,,	12	0	0	11	17·25	7	0	15	......
	Rice & Co.	,,	7	10	2	8	1·73	18	0	13	......
	Chalmers & Co.	,,	63	10	0	11	15·77	37	0	6	......
	Williams & Co.	,,	87	10	1	5	8·91	111	0	0	......
	Sullivan & Co.	,,	7	0	0	5	17·12	2	0	0	......
	Short & Doust	,,	12	0	1	15	0·00	21	0	0	......
	Williams & Co.	,,	111	0	1	3	23·13	133	0	0	......
Bulladelah Division	Curreki	Coolongolook	147	0	1	18	2	280	0	0	......
	Sterling	,,	25	0	1	2	10	28	0	0	......
	Mountain Maid	,,	140	0	0	2	13	18	0	0	......
	Mountain Widow	,,	7	0	2	6	13	16	6	0	......
	Big Wonder	,,	2	0	3	15	0	7	10	0	......
	Queen Mary	,,	5	0	0	14	0	3	10	0	......
	Just in Time	,,	30	0	0	16	16	25	0	0	......
	Golden Valley	,,	10	0		......			......		......
	Queen of Boolbie	Boolbie	75	0	0	16	0	60	0	0	.....
	Murray & Potts	,,	30	0	1	0	0	30	0	0	......
Wingham Division	Donkin & Hills	Kiwarac	2	0	6	10	0	13	0	0	......
			2,082	15	1	15	21·88	3,813	7	19	

Summary.

QUANTITY of Gold obtained from certain parcels of Quartz, crushed during the year 1880, showing the average yield of Gold per ton.

District.	Quartz crushed.			Average yield of Gold per ton.			Total yield of Gold.		
	Tons	cwts.	grs.	ozs.	dwts.	grs.	ozs.	dwts.	grs.
Bathurst	5,811	0	0	0	5	11·99	1,597	18	7
Tambaroora and Turon	4,183	10	0	0	15	6·72	3,196	4	13
Mudgee	2,420	0	0	0	9	17·25	1,176	0	0
Lachlan	3,023	10	0	0	12	12·48	1,892	15	0
Southern	2,102	0	0	1	0	0·28	2,103	5	0
Tumut and Adelong	2,528	10	0	1	4	4·13	3,055	19	18
Peel and Uralla	2,447	0	0	0	17	1·85	2,089	8	0
New England and Clarence	66	5	0	7	3	10·23	475	2	0
Hunter and Macleay	2,082	15	0	1	15	21·88	3,813	7	19
	24,664	10	0	0	15	17·54	19,400	0	9

TABLE showing the width, dip, and strike of Quartz Reefs in some of the deepest Mines in the Colony, being worked during the year 1880, and the average yield of Gold per ton.

District.	Division.	Name of Company.	Name of Reef.	Depth at which Quartz was got.	Quantity crushed.	Average yield of Gold per Ton.			Width of Reef.	Dip of Reef (from the horizon).	Strike of the Reef. (Bearing.)
				feet.		ozs.	dwts.	grs.			
Tambaroora and Turon.	Hill End	Star of Peace..........	Hawkins Hill	750	1,100 tons	0	10	0	....	....	....
		Krohmann's A. G. M. Co.	do	713	281 ,,	2	7	0	....	....	....
		New Caledonian	do	375	730 ,,	0	4	0	....	....	....
		Patriarch	do	480	224 ,,	0	10	17	....	....	....
		do	do	250	70 ,,	3	1	0	....	....	....
Bathurst	Bathurst	Independent Co-operative Co.	Napoleon Reef	160	30 ,,	0	6	16	....	....	....
		do	Mosquito Reef	90	17 ,,	0	1	4	....	....	....
		do	Flat Reef..........	100	68 ,,	0	2	2	....	....	....
	Tuena	Victoria Co.	....	200	150 ,,	0	10	4	....	....	....
		Washington Reef	Washington	180	100 ,,	0	10	0	....	....	....
	Carcoar	Never Budge	The Forest	100	800 ,,	0	6	10	....	....	....
	Mitchell's Creek	Grabham & McCarthy..	Dark Corner	30	49 ,,	1	0	0	2 ft.	....	North and south.
		Robert Smith and party	do	50	100 ,,	0	13	3	1 to 1 ft. 6 in.	....	....
Mudgee	Wellington	Mitchell's Creek	Lincoln	300	1,415 ,,	0	12	0	2 ft.	East	North.
		Kaiser	Mitchell's Creek ..	100	1,155 ,,	0	6	0	....	....	....
Lachlan	Parkes	Talbot, Medlyn, & party	Bonnie Dundee	174	38 ozs.	19	10	0	8 ft.	South-west	....
		Dayspring	Currajong Reef	105	74 tons	0	15	0	....	....	....
		Duggan & Co.	do	96	15 ,,	2	15	5	....	....	....
		Little Wonder	Parkes	96	26 ,,	0	11	0	....	....	....
			Bonnie Dundee	175	638 ,,	0	10	5	....	....	....
			do No. 2..	145	62 ,,	0	19	16	....	....	....
	Grenfell	Campbell and party ..	Homeward Bound	240	322 ,,	0	16	0	....	....	....
		Mitchelland party	do	240	189 ,,	0	6	0	....	....	....
		Pritchard and party....	Outward Bound ..	80	36 ,,	0	3	0	....	....	....
		Pettit and party	Enterprise	170	120 ,,	1	8	0	....	....	....
		O'Brien's G. M. C.	O'Brien's Lease	100	200 ,,	0	7	6	....	....	....
		Consols Lease, sundry parties	O'Brien's Hill......	210	300 ,,	0	10	0	....	....	....
Southern	Major's Creek..	Big Hill Co.	Big Hill	184	300 ,,	0	2	0	....	....	....
	Nowra	Eureka	Dangera Creek	250	70 ,,	0	1	2	....	....	....
		Homeward Bound	do	400	80 ,,	1	1	0	....	....	....
		Pinnacle	do	175	218 ,,	1	9	8	....	....	....
		Keiller's	do	150	16 ,,	0	15	0	....	....	....
Tumut and Adelong.	Adelong	Perseverance G. M. C...	Old Line of Reef ..	840	796 ,,	0	1	6	5 in.	....	10° North.
		North Caledonian......	Williamstown	300	78 ,,	1	18	0	6 ,,	....	....
		Union G. M. C.	Victoria Reef	428	73 ,,	0	19	0	1 to 6 ft.	East	North and south.
		Challenger	Adelong	600	793 ,,	0	16	15	....	....	....
		Trudgeon and party....	Caledonian	220	44 ,,	1	4	0	8 in.	....	North and south.
	Tumbarumba..	Peep O'Day	Ournie	180	208 ,,	1	15	0	....	....	....
Peel and Uralla	Nundle	J. B. Robertson & party	Opossum	250	500 ,,	0	10	0	10 in.	East	North and south.
		do	Foley's	230	10 ,,	1	0	0	9 ,,	,, ...	,,
		T. Bakewell and party..	Brown Snake	160	100 ,,	1	0	0	6 ,,	North-east	N. W. and S. E.
		J. Stanning	Foley's Folly	200	25 ,,	0	17	0	6 ,,	West	North and south.
		Wheal Prosper Co.	do.	500	40 ,,	0	18	0	6 ,,	,, ...	,,
New England and Clarence.	Solferino	Private Miners	Garibaldi	70	1¼ ,,	61	6	16	9 ,,	....	....
		do	do	70	¾ ,,	220	0	0	9 ,,	....	....
Hunter and Macleay.	Bulladelah	Curreki	Coolongolook	95	147 ,,	1	18	2	....	....	....
		Sterling	do	75	25 ,,	1	2	10	....	....	....

TABLE showing approximately the Machinery employed in Gold and Tin Mining during the year 1880.

District and Division.	Quartz.								Alluvial.													
	Steam-engines employed in Winding, Crushing, &c.		Crushing Machines.	Stamp Heads.	Whims and Pulleys.	Water Wheels.	Derricks.	Whips.	Steam-engines employed in Winding, Pumping, &c.		Puddling Machines.	Whims and Pulleys.	Whips.	Quicksilver as compound Cradles.	Sluices and Toms.	Water Wheels.	Hydraulic Hoses.	Pumps.	Sluice Boxes.	Derricks.	Stamp Heads.	Boring Machines.
	No.	Aggregate Horse power.							No.	Aggregate Horse power.												
BATHURST DISTRICT—																						
Bathurst Division	2	12	2	15	6	...	...	...	...	......	4	6	...	...	...	...	...	...	...	...	...	...
Trunkey "	2	46	...	48	...	1	...	...	...	......	4	...	...	...	...	...	...	...	...	...	...	...
Rockley "	1	8	1	8	...	...	...	...	...	......	1	...	...	...	...	...	...	...	...	...	...	...
Mitchell's Creek Division	3	16	3	14	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
TAMBAROORA AND TURON DISTRICT—																						
Hill End Division	17	285	...	138	...	...	...	...	2	1	2	...	...	...	...	8	...	...	20	...	...	...
Sofala "	6	100	...	49	...	...	...	...	1	......	...	...	...	...	...	12	...	12	...	...	...	...
Ironbarks "	...	......	8	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
MUDGEE DISTRICT—																						
Wellington Division	1	25	...	20	...	...	...	...	...	....	...	...	...	...	...	...	...	...	...	...	...	...
Windeyer "	2	28	2	20	...	...	...	...	...	......	8	...	...	...	...	...	...	...	...	...	...	...
LACHLAN DISTRICT—																						
Forbes Division	1	18	1	10	...	...	...	...	2	60	4	8	6	...	...	5	...	...	...	...	...	...
Parkes "	3	47	3	37	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Cargo "	2	32	...	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Grenfell "	2	44	4	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
SOUTHERN DISTRICT—																						
Major's Creek Division	6	32	5	64	...	...	...	...	...	......	11	...	...	...	...	...	...	...	...	...	...	...
Braidwood Division	...	...	...	...	...	...	...	...	...	......	...	...	...	...	20	5	...	40	60	...	...	...
Araluen	1	12	2	18	...	1	...	...	7	78	...	...	...	...	...	...	...	18	20	...	...	...
Little River	...	......	...	...	...	...	...	...	...	......	...	...	...	...	...	6	...	6	100	...	...	...
Nowra	5	40	...	55	...	1	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Moruya	1	8	1	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Wagonga	...	15	1	8	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Gunning	...	......	...	...	...	...	...	...	1	10	...	...	...	...	...	...	...	...	...	...	...	...

TABLE showing Machinery, &c.—*continued.*

District and Division.	Quartz.								Alluvial.													
	Steam-engines employed in Winding, Crushing, &c.		Crushing Machines.	Stamp Heads.	Whims and Pulleys.	Water Wheels.	Derricks.	Whips.	Steam-engines employed in Winding, Pumping, &c.		Puddling Machines.	Whims and Pulleys.	Whips.	Quicksilver as compound Cradles.	Sluices and Toms.	Water Wheels.	Hydraulic Hoses.	Pumps.	Sluice Boxes.	Derricks.	Stamp Heads.	Boring Machines.
	No.	Aggregate Horse power.							No.	Aggregate Horse power.												
TUMUT AND ADELONG DISTRICT—																						
Adelong Division	9	120	4	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Albury "	2	16	2	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
PEEL AND URALLA DISTRICT—																						
Nundle Division	...	......	...	20	...	5	...	...	3	57	...	...	...	...	...	...	...	...	...	...	...	...
Barraba "	...	8	2	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Bingera "	1	10	...	8	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
NEW ENGLAND AND CLARENCE DISTRICT—																						
Tenterfield Division	1	8	1	14	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Solferino "	1	7	4	30	...	1	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Boorook "	5	48	3	24	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Dalmorton "	1	30	...	10	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
HUNTER AND MACLEAY DISTRICT—																						
Bulladelah Division	1	35	1	15	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Dungog "	...	25	2	...	...	1	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...

The foregoing tables have been compiled from information supplied by the Wardens and Mining Registrars.

HARRIE WOOD,
Under Secretary for Mines.

Department of Mines,
Sydney, 16th March, 1881.

WARDENS AND MINING REGISTRARS' REPORTS.

BATHURST DISTRICT—BATHURST, OBERON, ROCKLEY, TRUNKEY, AND TUENA DIVISIONS.

(*Mr. Warden T. A. Smith, P.M., Trunkey.*)

IN forwarding you my annual report, I have the honor to state that mining in the Bathurst Division of the Western Gold-fields during 1880 has been far from satisfactory; the rush to Temora caused many to leave these fields for several months, but most of them have now returned. The chief drawback has been the uncertain supply of water for sluicing and alluvial mining generally. Those who have worked upon quartz-reefs have not any cause to complain, having made regular wages varying from £2 upwards.

No new discoveries have been made. A rush took place to Mount Werong, the head of the Abercrombie River, 40 miles from Oberon, but resulted in disappointment. I believe had the disappointed miners prospected down the river towards the junction of the Isabella River, something satisfactory would have resulted.

Trunkey.—In quartz-mining little has been done; only 762 tons of stone have been crushed, yielding 630 ozs. of melted gold. Alluvial mining has produced 1,413 ozs., making a total of 2,238 ozs., valued at £7,803. There are four quartz-mills on the field.

Oakey Creek.—2,500 tons of stone have been crushed, yielding gold valued at £584 10s.

Tuena.—Nothing but alluvial mining here. The return of gold locally disposed of is £2,249.

Peelwood.—Copper only is sought for here. This mine has been worked regularly, yielding for the year 136 tons of copper, valued at £5,440. The ores were treated at the mine. Value of plant, £3,500.

Junction Point.—The amount or value of alluvial gold is not obtainable, but probably exceeds the sum of £1,000; the value of quartz gold obtained is £1,423. There are two quartz-mills on this field.

Rockley.—Only 261 ozs. of gold disposed of locally; this is only a small portion of that obtained. I have no means of getting at a correct return of the gold won.

Isabella River.—A quartz reef, showing very rich specimens, has been found at the head of the old workings upon this river. I believe it was from this reef that the Isabella alluvial gold originally came, as no gold has been found above this reef.

Thompson's Creek.—This copper-mine has passed into the hands of experienced persons. During the year 427 tons of ore have been raised and sent to Lithgow for treatment, the value being estimated at £2,472, and, as furnaces are being erected upon the ground to treat the ores, next year's returns probably will be better.

Sewell's Creek.—A few miners—Chinese and European—stick closely to this creek, and I have no doubt make fair wages. It was in the bed of this creek that the good samples of asbestos were obtained, but nothing has been done to open out and see if the asbestos is in quantity. Two leases were applied for, but have been returned for cancellation. I hope the ground will now be secured by persons who will prospect it.

Oberon.—The rush to Mount Werong caused a little stir here during the year. 303 ounces of alluvial gold have been obtained, 87 ozs. being from Mount Werong, the whole value being about £1,060.

Mitchell's Creek.—Only 781 ozs. of gold have been obtained; this was all quartz gold, valued at £2,343. I hear that a lode rich in silver has been discovered; probably this may be of considerable value. All the Mitchell's Creek gold is of poor quality on account of the silver it is mixed with; I believe £2 5s. per ounce is only obtainable for some of the gold.

Glenmire.—Some work has been done here, and also at Meadow Flat, but I cannot give any result. A few leases have been taken up at the latter place.

There being no bailiff at Trunkey, I have had no one to assist me in obtaining the information.

Bathurst District—Carcoar Division.

(*Mr. Warden North, P.M., Carcoar.*)

I have the honor to report that gold-mining in my division of the Bathurst District has during the past year shown a decided improvement, as is evidenced by the amount of gold forwarded from this locality by escort in 1880, compared with that of previous years.

Taking the five years commencing 1876 and ending 1880, the returns are in round numbers as follows:—

In 1876	3,548	ounces
1877	3,043	„
1878	4,666	„
1879	4,437	„
1880	5,116	„

This is independent of what has been sold in neighbouring townships, or forwarded for sale by private hands.

The number of miners' rights issued at Carcoar last year exceeds those issued in 1879 by 136, which is another evidence that this district is finding more favour with gold-seekers.

The promising reefs discovered during the latter part of the year at Milburn Creek are attracting a good deal of attention; and at the end of the year thirty-six applications for leases were received at my office, as also several applications for block claims. The various reefs opened up are said to show rich stone throughout; about 2 tons from M'Donald and party's (prospectors) claim, crushed at the Mint, averaged 22 ozs. 8 dwts. per ton. Machinery is now in course of erection on the ground, and I have no doubt the returns from this portion of my division will be highly satisfactory during the present year.

The Brown's Creek Company continues steadily at work, and the mine maintains its reputation as the premier gold mine of the district, the average monthly yield being fully 300 ozs.

From Gally Swamp, Lane and party (two men) have brought in several nice cakes of gold, and are no doubt quietly making a good thing out of the reefs in that locality.

The sluicing claims at Flyer's Creek, and the alluvial workings at Lumpy Swamp and the Forest, are still found remunerative to the holders.

On the Balubala River several of the old claims are about to be worked by water-power, to test the Three-mile, Frenchman's, Old Junction Claim, &c., and the parties interested seem very sanguine as to the results.

At Wood's Flat nothing has been done during the year, the prospectors, M'Donald and party, having failed to strike payable gold in any of the shafts which they sunk.

In copper I have nothing to report, as the mines have lain idle nearly all the year; but I believe there is a prospect of their again shortly starting to work.

Bathurst District.

(*Mr. Warden Lane, P.M., Orange.*)

During the past year there has been more activity evinced in mining pursuits than for some time past, although nothing particular has occurred that I am aware of to account for it. 367 miners' rights were issued here, whereas there were only 113 the preceding year.

A few gentlemen (Messrs. Slater, Bassett, and Spencer) continue to persevere in their operations at Ophir. The weather has been too dry for the races that were being cut when I wrote my last report to have had a fair trial. The tunnelling is continued, and some gold procured.

At the Forest Reefs the Great Extended shaft is down 120 feet; eight men and a steam-engine are continuously employed. Nearly £900 has already been expended. If this undertaking prove a success, it will be a good thing for that neighbourhood.

Carney & Co. washed up the other day, and realised 260 ounces of gold from their labour (seven men) during about five months. Two or three other parties are procuring a little gold.

There was some considerable excitement a short time ago at Four-mile Creek and Soldier's Creek near the Canoblas on the south-east side, but it seems to have subsided again. The gold was exceedingly fine, and I fear the appliances used were not suitable.

Some are of opinion that by the use of machinery payable gold could be procured at the abandoned diggings the Orange side of Caloola, but I am not in a position to offer an opinion upon the point.

I have been expecting to be supplied with particulars from Ophir to enable me to give a more detailed report, hence the reason for being so late with this.

BATHURST DISTRICT—BATHURST DIVISION.

(*C. E. B. Maybury, Mining Registrar.*)

IN submitting my report for the year ending the 31st December, 1880, I have much pleasure in being able to record some reaction in the gold-mining industry of this division; and though not to any considerable extent, still, when compared with the last few preceding years, it must be admitted by any impartial observer that during the last twelve months more than the usual amount of interest and energy have been displayed in the search for the precious metal. This is owing, I am convinced, in a great measure to the discovery of so rich a field at Temora; the excitement consequent thereon making itself felt in this district equally with places less remote and apparently creating a "digger's heart" in many to whom the use of pick and shovel was as unnatural as strange. The very fact that the number of miners' rights issued by me nearly doubles that of last year is in itself sufficient to point to some unusual agitation. Prospecting parties were more numerous and the search for gold more general. Occasionally the normal quiet of the citizens of Bathurst would be disturbed by a report that rich gold had been struck in the neighbourhood, and for a brief space the mind would dwell on the probable results of such a discovery and the good that must accrue to the district generally; when suddenly the calculations of the most careful would be rudely upset by the receipt of a more truthful account—generally resolving itself into "Got the colour with fair prospects," and in most cases the "fair prospects" would prove "not payable—abandoned." I have merely mentioned these facts as an evidence of the excitement referred to, and shall now proceed to speak more particularly of the operations that survive.

Prospecting at the Bald Hill, Bathurst Common.—In my last report I informed you of some steps that were then being taken to form a Prospecting Association, having for its object the further development of the resources of the district generally and of the Bald Hills in particular. A second public meeting in connection with the Association was held on the 16th January, 1880, when the following motion was carried:—

"That the Bathurst Gold-mining and Prospecting Association be represented by 520 shares of £1 each, calls to be made monthly in advance of 1s. 8d. each share."

324 shares were taken up, and during the month of April the work of driving a tunnel into the Bald Hill was commenced; two men being employed at first, but the number being afterwards increased to four. Shortly after the formation of the Association application was made to the Hon. the Minister for Mines for assistance from the vote in aid of prospecting, and on the 7th May the following letter was received by Mr. E. Webb, M.P., of Bathurst, who had interested himself in the matter:—

Department of Mines,
Sydney, 6 May, 1880.

Sir,—I have the honor to acknowledge your letter of the 24th ultimo, containing deposit receipt for £50, and a request on behalf of the Bathurst Prospecting Association that they may be allowed a like sum out of the vote in aid of prospecting.

In reference thereto, I am directed to inform you that the Secretary for Mines has approved of the granting of the sum in question, which will be paid after inspection of work to be performed, and a report from an officer appointed by the Department.

I have, &c.,
HARRIE WOOD,
Under Secretary.

E. Webb, Esq., M.P.

On the 9th August following, the works were inspected by Mr. Inspector Slee, who was favourably impressed with appearances, and recommended Government aid to the extent of 5s.

per foot. Shortly afterwards the sum of £50 was received from this source by the treasurer of the Association. Since then the work has steadily progressed, but with no more satisfactory result. Trial washings have been made at various times, and in each instance the "colour" has been obtained, while the general indications have been sufficiently good to induce a continuation of the work. In December last Mr. Inspector Slee made another visit of inspection, when, I am informed his opinion still favoured the probability of ultimate success. On his report another sum of £50 was granted to the Association by Government. Three men are employed at the present time, and are now driving through hornblendic granite and pebbly drift, at a distance of 110 feet from the mouth of the tunnel. The workmen are paid 25s. per week, and have an interest in the profits should any accrue. The total amount expended up to the end of the year was £177 10s., and the number of shares paid up was 271.

The Independent Co-operative Gold-mining Company.—Near Glanmire, four reefs, known respectively as the Mount Ovens, the Napoleon, the Mosquito, and the Flat Reefs, are being worked by a Company calling themselves the Co-operative Gold-mining Company. They employ on the works twenty men and three boys, and the machinery used consists of a one-horse whim and a quartz-crushing machine with eight stamp heads, engine, &c. The land is held under the Gold Lease Regulations.

The Mount Ovens Reef.—The depth of the shaft is 28 feet, the width of vein 12 inches, and the bearing north and south. The quantity of quartz raised was 60 tons, which yielded on crushing 12 ounces of gold, valued at £36.

Napoleon Reef.—The shaft is down to the depth of 160 feet; the width of the lode is 12 inches, and the bearing north and south. 30 tons of stone were raised, yielding 10 ounces of gold, of the value of £30.

Mosquito Reef.—Three shafts have been sunk on this reef, the deepest being 90 feet. The average width of the lode is 6 inches, bearing north and south. 17 tons of stone were raised, which when crushed yielded 12 ounces of gold.

Flat Reef.—The tunnel by which this reef is worked has been driven 100 feet. The lode is 18 inches wide. The stone raised amounted to 68 tons, and yielded 7 ounces of gold, valued at £3 per oz.

Richards's Reef, Glanmire.—Another reef in the same locality, some 2 miles east of the Napoleon, is being worked by Richards and party, and is known as "Richards's Reef." The tunnel has been driven about 90 feet, but no stone has yet been crushed. The vein, bearing north and south, is about 4 inches wide, and it is estimated that the stone will yield an ounce to the ton. The land is held as a prospecting area, and has just been registered for suspension of work, owing to the want of water. The machinery on the ground is valued at £500, and consists of a quartz-crushing machine with seven stamp heads, and a twelve-horse portable steam-engine.

Caloola Reef.—This reef is being worked by Mr. George Hayton and a party of five, and promises good returns. Two shafts have been sunk, the deepest being 60 feet, at which depth they are now driving a level. 6 tons of quartz are to grass, and Mr. Hayton informs me that it is expected to yield the very large percentage of from 40 to 50 ounces to the ton. No crushing, however, has yet taken place, so of course there is no certainty as to what the yield will be. Some specimens from the reef were exhibited to me, and were undoubtedly of rich appearance.

New find.—In the *Bathurst Free Press* of the 25th December last appeared the following:—

> MORE GOLD.—A person named Sullivan called at our office yesterday with a sample of gold, exceedingly bright and pure. On making inquiries as to the place where it was found, &c., Mr. Sullivan said that he and two other men had been prospecting to the south of Bathurst for the last fortnight. A day or two ago they sunk a shaft 22 feet, and in a drive from the shaft they found the gold he showed us, weighing 6 dwts. 21 grs., which was the product of one and a half buckets of washdirt. There is only a small quantity of washdirt on the rock; but the gold is very coarse and has evidently not travelled far from the reef, as it is rough and angular, as well as coarse. The gold was obtained within 10 miles of Bathurst, and the country around is described as full of quartz reefs for 20 miles.

I could not ascertain Mr. Sullivan's address, and consequently am unable to give any further particulars. I am told, however, that the locality of the find is Campbell's River, and if so the Mining Registrar at Rockley will probably refer to the subject at greater length in his report.

Fish River.—Some ten or twelve men have been working here in alluvial ground, and have made good wages.

Dirty Swamp.—At the time of my last report some six or seven men were at work on what is known as Eagan's property in this locality. The attractions of Temora, however, proved stronger than their powers of resistance, and they were among the many who flocked thither during the time of the first rush. They have since realised the fact, "All that glitters is not gold," and, I am informed, are about to return to the scene of their former labours.

Other works.—In addition to the operations alluded to, there are several prospecting parties and small claim-holders at work in different parts of the district, but the result of their labours cannot be regarded as satisfactory—the most fortunate among them only making poor wages.

Escort returns.—From the Gold Receiver at Bathurst I learn that the quantity of gold transmitted by escort from Bathurst to Sydney during the year was 2,591 ozs. 4 dwts. 20 grs., being an increase on the amount forwarded during 1879 of 153 ozs. 13 dwts. 18 grs. The principal part thereof was transmitted by the Managers of the local Banks, who do not state from what localities it is obtained.

Copper.

Copper-mining within this division has certainly not flourished during the year,—a fact attributable no doubt in a very great measure to the low state of the copper market, the prices attained being insufficient to make the working of poor ore a profitable investment. With one exception, however, the mines open at the beginning of the year are still at work, though the amount of ore raised was not so large as it would have been had the market been in a more satisfactory condition, and it is very questionable whether any would have survived had they been managed by a person of less energy and determination than Mr. Lewis Lloyd—a gentleman largely instrumental in developing the copper-mining industry of this Colony. At the present time the Burraga mine, at Thompson's Creek, is by far the most important in the district. I have been favoured with a return in connection therewith, which plainly shows its richness; but as the locality of the mine falls within the Rockley Division, I have forwarded the information to the Mining Registrar there stationed, to be embodied in his report. Particulars, in tabular form, in connection with each of the mines I am about to notice, have been kindly supplied to me by Mr. Lloyd, and are attached hereto.

Cow Flat Mine.—In my report for 1879 I stated that Mr. Lloyd was in treaty for a lease of this mine at the time I wrote. Arrangements were shortly afterwards concluded by that gentleman with the Company then working the mine, and preparations were at once made for sinking a new shaft. Twenty men were put to work at a distance of some 400 yards from the old workings, and here the new shaft has been sunk to the depth of 72 feet; so far, however, the result has not been so satisfactory as was expected. The lode is well defined, and has a width of about 2 feet, but the ore is not very rich in character. The quantity raised during the year amounted to 376 tons, and was sold to the Smelting Company at Bowenfels for £813. The number of men employed at the present time is twelve.

Belmore Mine at Cow Flat.—Four men have been at work during the year, and are driving a level at a depth of 60 feet. The quantity of ore raised was 172 tons, showing a decrease on the previous year of 18 tons; it was smelted at Bowenfels, and sold for £317, or £123 less than the amount realised last year.

Prospect Mine, Cow Flat.—The ore raised amounted to 30 tons, and was sold for £117.

Apsley Mine.—This mine was closed during a considerable portion of 1879, but early in 1880 it changed hands and has since been worked without interruption. Six men are employed, and a new shaft has been sunk to a depth of 8 or 9 fathoms. The ore raised was of very fair quality, and amounted to 191 tons; it was sold for £750, and was smelted at Bowenfels, but I have not been able to ascertain the exact yield.

Wiseman's Creek Mine.—This mine was closed early in the year, and has not been reopened. I have heard that a new find has recently been made in the locality on private property, and that an endeavour will be made to obtain a lease of the land with a view to its being worked.

Iron.

The Iron Mine at Newbridge.—Early in the year the lessees were called upon to show cause why the lease should not be cancelled, on account of the non-performance of the labour conditions, and being unable to satisfy the Minister the lease was declared cancelled in April last. It was immediately applied for by Mr. Enoch Hughes, of Lithgow, but so far as I can learn no work has been done. The only outlet from the land leased to the Railway Station is through an acre of freehold property—possession of which cannot be obtained. Until some arrangement is made in this direction the mine will probably remain idle.

BATHURST DISTRICT—TRUNKEY DIVISION.

(*J. O'Connor, Mining Registrar.*)

IN forwarding you the attached papers, I have the honor to state that mining in this district during the last year has fallen away very much. The rush to Temora caused many to leave this place, but most of them have now returned.

The chief drawback here has been the want of water for sluicing purposes. The miners can only work at sluicing two or three months in each year, for the want of water.

A few days ago a slight rush took place at Scabben Flat, about 4 miles from Trunkey. The prospectors bottomed at 14 feet, and obtained 4 dwts. to the dish, but this was only a patch. They are now driving, and the ground is dipping 1 foot in 2 eastward into the hill.

BATHURST DISTRICT—TUENA DIVISION.

(*Montgomery Jones, Mining Registrar.*)

IN forwarding the accompanying papers, and submitting my report for 1880 on the state of the gold-fields in the Tuena division of the Bathurst Mining District, I have the honor to state that alluvial mining is in much the same state as last year—not any new ground having been discovered. The season having been very dry there has been very little sluicing done, which is the principal mode of obtaining gold here.

In quartz-mining there has been a very marked improvement, the amount of gold won for the number of miners being very fair, and a fair prospect for the coming year.

In copper-mining there has been a fair return, the Peelwood Mines having been at work most part of the past year.

The number of miners' rights issued, 109, being 41 more than last year.

BATHURST DISTRICT—CARCOAR DIVISION.

(*W. B. Warner, Mining Registrar.*)

THE year 1880 has shown a marked improvement in this district over 1879, both as regards the increased yield of gold, and also on account of the recent discoveries of new reefing country in a part of the district where gold has not hitherto been worked. First, as to the yield of gold. The greatest quantity sent down by the Government escort was—

	ozs.	dwts.	grs.
In 1879	4,437	4	4
In 1880	5,116	19	1

Thus showing an increase in the yield for last year of about 680 ozs., which I have every reason to believe would have been much more, but that some very good parcels (one of 200 ozs. among them) have been forwarded privately to Sydney. From the alluvial diggings about Lumpy Swamp and the Forest most of the gold is still disposed of in Orange and Bathurst.

YIELD of Gold from Quartz—*continued.*

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per Ton.	Total yield of Gold.	Depth of Workings.
			Tons cwt.	ozs. dwts. grs.	ozs. dwts. grs.	feet.
HUNTER AND MACLEAY DISTRICT—*continued.*						
Copeland Division—*continued.*	Queen of Beauty Reef	Bowman River	15 0	0 6 16·33	5 0 5	......
	John Hichardt	,,	12 0	0 11 17·25	7 0 15	......
	Rice & Co.	,,	7 10	2 8 1·73	18 0 13	......
	Chalmers & Co.	,,	63 10	0 11 15·77	37 0 6	......
	Williams & Co.	,,	87 10	1 5 8·91	111 0 0	......
	Sullivan & Co.	,,	7 0	0 5 17·12	2 0 0	......
	Short & Doust	,,	12 0	1 15 0·00	21 0 0	......
	Williams & Co.	,,	111 0	1 3 23·13	133 0 0	......
Bulladelah Division	Curreki	Coolongolook	147 0	1 18 2	280 0 0	......
	Sterling	,,	25 0	1 2 10	28 0 0	......
	Mountain Maid	,,	140 0	0 2 13	18 0 0	......
	Mountain Widow	,,	7 0	2 6 13	16 6 0	......
	Big Wonder	,,	2 0	3 15 0	7 10 0	......
	Queen Mary	,,	5 0	0 14 0	3 10 0	......
	Just in Time	,,	30 0	0 16 16	25 0 0	......
	Golden Valley	,,	10 0	......	......	......
	Queen of Boolbie	Boolbie	75 0	0 16 0	60 0 0	.....
	Murray & Potts	,,	30 0	1 0 0	30 0 0	......
Wingham Division	Donkin & Hills	Kiwarac	2 0	6 10 0	13 0 0	......
			2,082 15	1 15 21·88	3,813 7 19	

Summary.

QUANTITY of Gold obtained from certain parcels of Quartz, crushed during the year 1880, showing the average yield of Gold per ton.

District.	Quartz crushed.	Average yield of Gold per ton.	Total yield of Gold.
	Tons cwts. grs.	ozs. dwts. grs.	ozs. dwts. grs.
Bathurst	5,811 0 0	0 5 11·99	1,597 18 7
Tambaroora and Turon	4,183 10 0	0 15 6·72	3,196 4 13
Mudgee	2,420 0 0	0 9 17·25	1,176 0 0
Lachlan	3,023 10 0	0 12 12·48	1,892 15 0
Southern	2,102 0 0	1 0 0·28	2,103 5 0
Tumut and Adelong	2,528 10 0	1 4 4·13	3,055 19 18
Peel and Uralla	2,447 0 0	0 17 1·85	2,089 8 0
New England and Clarence	66 5 0	7 3 10·23	475 2 0
Hunter and Macleay	2,082 15 0	1 15 21·88	3,813 7 19
	24,664 10 0	0 15 17·54	19,400 0 9

TABLE showing the width, dip, and strike of Quartz Reefs in some of the deepest Mines in the Colony, being worked during the year 1880, and the average yield of Gold per ton.

District.	Division.	Name of Company.	Name of Reef.	Depth at which Quartz was got.	Quantity crushed.	Average yield of Gold per Ton.			Width of Reef.	Dip of Reef (from the horizon).	Strike of the Reef. (Bearing.)
				feet.		ozs.	dwts.	grs.			
Tambaroora and Turon.	Hill End	Star of Peace	Hawkins Hill	750	1,100 tons	0	10	0	...	...	...
		Krohmann's A. G. M. Co.	do	713	281 „	2	7	0	...	...	...
		New Caledonian	do	375	730 „	0	4	0	...	...	...
		Patriarch	do	480	224 „	0	10	17	...	...	...
		do	do	250	70 „	3	1	0	...	...	...
Bathurst	Bathurst	Independent Co-operative Co.	Napoleon Reef	160	30 „	0	6	16	...	...	...
		do	Mosquito Reef	90	17 „	0	1	4	...	...	...
		do	Flat Reef	100	68 „	0	2	2	...	...	...
	Tuena	Victoria Co.	...	200	150 „	0	10	4	...	...	...
		Washington Reef	Washington	180	100 „	0	10	0	...	...	...
	Carcoar	Never Budge	The Forest	100	800 „	0	6	10	...	...	...
	Mitchell's Creek	Grabham & McCarthy	Dark Corner	30	49 „	1	0	0	2 ft.	...	North and south.
		Robert Smith and party	do	50	100 „	0	13	3	1 to 1 ft. 6 in.	...	...
Mudgee	Wellington	Mitchell's Creek	Lincoln	300	1,415 „	0	12	0	2 ft.	East	North.
		Kaiser	Mitchell's Creek	100	1,155 „	0	6	0	...	...	...
Lachlan	Parkes	Talbot, Medlyn, & party	Bonnie Dundee	174	38 ozs.	19	10	0	3 ft.	South-west	...
		Dayspring	Currajong Reef	105	74 tons	0	15	0	...	...	...
		Duggan & Co.	do	96	15 „	2	15	5	...	...	...
		Little Wonder	Parkes	96	26 „	0	11	0	...	...	...
			Bonnie Dundee	175	638 „	0	10	5	...	...	...
			do No. 2	145	62 „	0	19	16	...	...	...
	Grenfell	Campbell and party	Homeward Bound	240	322 „	0	16	0	...	...	...
		Mitchelland party	do	240	189 „	0	6	0	...	...	...
		Pritchard and party	Outward Bound	80	36 „	0	3	0	...	...	...
		Pettit and party	Enterprise	170	120 „	1	8	0	...	...	...
		O'Brien's G. M. C.	O'Brien's Lease	100	200 „	0	7	6	...	...	...
		Consols Lease, sundry parties	O'Brien's Hill	210	300 „	0	10	0	...	...	...
Southern	Major's Creek	Big Hill Co.	Big Hill	184	300 „	0	2	0	...	...	...
	Nowra	Eureka	Dangera Creek	250	70 „	0	1	2	...	...	...
		Homeward Bound	do	400	80 „	1	1	0	...	...	...
		Pinnacle	do	175	218 „	1	9	8	...	...	...
		Keiller's	do	150	16 „	0	15	0	...	...	...
Tumut and Adelong.	Adelong	Perseverance G. M. C.	Old Line of Reef	840	796 „	0	1	6	5 in.	...	10° North.
		North Caledonian	Williamstown	300	78 „	1	18	0	6 „	...	...
		Union G. M. C.	Victoria Reef	428	73 „	0	19	0	1 to 6 ft.	East	North and south.
		Challenger	Adelong	600	793 „	0	16	15	...	...	...
		Trudgeon and party	Caledonian	220	44 „	1	4	0	8 in.	...	North and south.
	Tumbarumba	Peep O'Day	Ournie	180	208 „	1	15	0	...	...	...
Peel and Uralla	Nundle	J. B. Robertson & party	Opossum	250	500 „	0	10	0	10 in.	East	North and south.
		do	Foley's	230	10 „	1	0	0	9 „	„	„
		T. Bakewell and party	Brown Snake	160	100 „	1	0	0	6 „	North-east	N. W. and S. E.
		J. Stanning	Foley's Folly	200	25 „	0	17	0	6 „	West	North and south.
		Wheal Prosper Co.	do.	500	40 „	0	18	0	6 „	„	„
New England and Clarence.	Solferino	Private Miners	Garibaldi	70	1¼ „	61	6	16	9 „	...	...
		do	do	70	¼ „	220	0	0	9 „	...	...
Hunter and Macleay.	Bulladelah	Curreki	Coolongolook	95	147 „	1	18	2	...	...	...
		Sterling	do	75	25 „	1	2	10	...	...	...

TABLE showing approximately the Machinery employed in Gold and Tin Mining during the year 1880.

District and Division.	Quartz.								Alluvial.													
	Steam-engines employed in Winding, Crushing, &c.		Crushing Machines.	Stamp Heads.	Whims and Pulleys.	Water Wheels.	Derricks.	Whips.	Steam-engines employed in Winding, Pumping, &c.		Puddling Machines.	Whims and Pulleys.	Whips.	Quicksilver as compound Cradles.	Sluices and Toms.	Water Wheels.	Hydraulic Hoses.	Pumps.	Sluice Boxes.	Derricks.	Stamp Heads.	Boring Machines.
	No.	Aggregate Horse power.							No.	Aggregate Horse power.												
BATHURST DISTRICT—																						
Bathurst Division	2	12	2	15	6	...	...	...	...	......	4	6	...	...	...	...	...	...	...	...	...	...
Trunkey "	2	46	...	48	...	1	...	...	...	......	4	...	...	...	...	...	...	...	...	...	...	...
Rockley "	1	8	1	8	...	...	...	...	...	......	1	...	...	...	...	...	...	...	...	...	...	...
Mitchell's Creek Division ...	3	16	3	14	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
TAMBAROORA AND TURON DISTRICT—																						
Hill End Division	17	285	...	138	...	...	...	...	2	1	2	...	...	...	...	8	...	...	20	...	...	...
Sofala "	6	100	...	49	...	...	...	...	1	......	...	...	...	...	...	12	...	12	...	...	...	...
Ironbarks "	...	......	8	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
MUDGEE DISTRICT—																						
Wellington Division	1	25	...	20	...	...	...	...	...	....	...	...	...	...	...	...	...	...	...	...	...	...
Windeyer "	2	28	2	20	...	...	...	...	...	......	8	...	...	...	...	...	...	...	...	...	...	...
LACHLAN DISTRICT—																						
Forbes Division	1	18	1	10	...	...	...	...	2	60	4	8	6	...	...	5	...	...	...	...	...	...
Parkes "	3	47	3	37	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Cargo "	2	32	...	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Grenfell "	2	44	4	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
SOUTHERN DISTRICT—																						
Major's Creek Division	6	32	5	64	...	...	...	...	...	......	11	...	...	...	...	...	...	...	...	...	...	...
Braidwood Division	...	...	...	...	...	...	...	...	...	......	...	...	...	...	20	5	...	40	60	...	...	...
Araluen	1	12	2	18	...	1	...	...	7	78	...	...	...	...	...	...	...	18	20	...	...	...
Little River	...	......	...	...	...	...	...	...	...	......	...	...	...	...	...	6	...	6	100	...	...	...
Nowra	5	40	...	55	...	1	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Moruya	1	8	1	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Wagonga	...	15	1	8	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Gunning	...	......	...	...	...	...	...	...	1	10	...	...	...	...	...	...	...	...	...	...	...	...

TABLE showing Machinery, &c.—*continued.*

District and Division.	Quartz.								Alluvial.													
	Steam-engines employed in Winding, Crushing, &c. No.	Steam-engines employed in Winding, Crushing, &c. Aggregate Horse power.	Crushing Machines.	Stamp Heads.	Whims and Pulleys.	Water Wheels.	Derricks.	Whips.	Steam-engines employed in Winding, Pumping, &c. No.	Steam-engines employed in Winding, Pumping, &c. Aggregate Horse power.	Puddling Machines.	Whims and Pulleys.	Whips.	Quicksilver as compound Cradles.	Sluices and Toms.	Water Wheels.	Hydraulic Hoses.	Pumps.	Sluice Boxes.	Derricks.	Stamp Heads.	Boring Machines.
TUMUT AND ADELONG DISTRICT—																						
Adelong Division	9	120	4	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Albury "	2	16	2	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
PEEL AND URALLA DISTRICT—																						
Nundle Division	...	......	...	20	...	5	...	...	3	57	...	...	...	...	...	...	...	...	...	...	...	...
Barraba "	...	8	2	...	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Bingera "	1	10	...	8	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
NEW ENGLAND AND CLARENCE DISTRICT—																						
Tenterfield Division	1	8	1	14	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Solferino "	1	7	4	30	...	1	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Boorook "	5	48	3	24	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Dalmorton "	1	30	...	10	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
HUNTER AND MACLEAY DISTRICT—																						
Bulladelah Division	1	25	1	15	...	...	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...
Dungog "	...	25	2	...	...	1	...	...	...	......	...	...	...	...	...	...	...	...	...	...	...	...

The foregoing tables have been compiled from information supplied by the Wardens and Mining Registrars.

Department of Mines,
Sydney, 16th March, 1881.

HARRIE WOOD,
Under Secretary for Mines.

TAMBAROORA AND TURON DISTRICT—HILL END DIVISION.

(*A. B. Burne, Mining Registrar.*)

I HAVE the honor herewith to forward my annual report as Mining Registrar for the Hill End division of the Tambaroora and Turon Mining District. In doing so, I deeply regret that I am unable to furnish a more glowing account of mining matters here. In many ways the depression in this industry is to be accounted for principally from the severe drought from which we have suffered, and also from the fact of the rush to the Temora Gold-fields having induced many to leave this place for that locality. This has caused a great stagnation, not only as regards mining, but in business of all kinds.

I will now proceed to give some account of the mines that have been carrying on operations during the past year and are still at work.

1st. The Patriarch, or perhaps better known by the name of the Trust and Try, Hawkins' Hill, 250 feet from surface. On Paxton's vein a drive has been taken from shaft, north 50 feet, one south 16 feet, back stoping 100 feet high in centre, at south end 60 feet high, and at north end 40 feet high. 215 tons of quartz have been taken from these workings, that realized 120 ozs. 5 dwts. of retorted gold. A cross drive has been taken in west from Paxton's vein at the 250 feet level a distance of 173 feet without cutting any vein, the ground proving very hard, and also a cross drive east from Paxton's vein at the same level, cutting four veins and several leaders (one vein only having been tried at the end of drive). Work done:—A drive south 20 feet, from 4 to 24 inches thick, showing a little gold; on north side a drive 50 feet, also back-stoping 40 feet high, vein dipping east, and in rolls from 1 to 8 inches thick, from which was taken 70 tons of quartz, yielding 214 ozs. of retorted gold.

Cost of working mine for the year 1880:—

	£	s.	d.
Wages paid	1,240	19	10
Sundries	279	1	10
Carriage of quartz to battery	74	5	0
	1,594	6	8
Total yield of gold, 334 ozs. 5 dwts., at £3 18s. per oz. ...	1,303	11	6
Cost of working over amount of gold won	£290	15	2

These particulars have been obtained through the courtesy of Mr. Edward Charlton, the manager.

2nd. Krohmann's Amalgamated Gold-mining Company, Hawkins' Hill. Since the 31st December, 1879, this mine has continued operations. By still further sinking the shaft to a depth of 716 feet they have gone through belts of slate and soft diorite showing leaders carrying gold, dipping nearly perpendicularly, running in a south-west direction. The prospects of this mine are looking fair; and from what the manager, Mr. Hugh Marshall (who kindly furnished these particulars), tells me, great hopes are still entertained of the mine turning out a successful venture.

3rd. The Monte Christo Gold-mining Company, Hawkins' Hill. Since the 31st December, 1879, operations have been carried on in this mine with some considerable success, as the yield of gold will show, viz., from crushings during the past year from 169 tons of quartz 386 ozs. 8 dwts. of gold was obtained. This mine is owned one-half by a private individual, one-half by a Company, the Company's half being let on tribute to the gentleman who manages for both parties, viz., Mr. Daniel Love, to whom I am indebted for this information. There is an average of six men employed in the mine.

4th. The Star of Peace Gold-mining Company, Hawkins' Hill. In regard to this mine I can say very little. It has been working during the past year, and a considerable number of men have been employed in it. For the present operations have been partially suspended, pending the result of a visit to England by Mr. Alfred Fairfax, one of the principal shareholders, who, I understand, has gone home for the purpose of floating a Company. The partial suspension of work in this mine has thrown a considerable number of men out of employment, and this has not tended to improve the complexion of things here.

The number of miners' rights issued from this office during the past year was 490, and fifteen business licenses. This shows a falling off of sixty-one in the number of miners' rights, but an increase of one in the number of business licenses.

The total amount of gold sent by escort from Hill End during the year 1880 amounted to 6,600 ozs. 19 dwts. 17 grs. I have not been able to ascertain the amount sent by private hands.

TAMBAROORA AND TURON DISTRICT—SOFALA DIVISION.

(*M. Fagan, Mining Registrar.*)

I HAVE the honor to forward my report relative to the mining interest in this division for the year 1880.

During the year mining operations have been steadily carried on, although the season has been unfavourable in consequence of the scarcity of water for sluicing purposes, which in later years has been the principal and most successful branch of gold-mining in the neighbourhood of Sofala.

Mr. G. Williams and party (four) obtained from their sluicing claim at Golden Point £62 1s. 6d. worth of gold, being the result of twelve days' labour, and other claims in the vicinity have almost yielded in equal proportion, but owing to the scarcity of water work had to be suspended.

A considerable portion of the bed of the Turon River, for some miles on either side of the township of Sofala, has been effectually worked by Chinese. My efforts to obtain returns from individual claims have not been successful, owing to a disinclination on the part of the Chinese miners to make their earnings known, but judging from the quantity of gold sold by them to the Bank and storekeepers in the township, I believe them to have been the most successful miners in the division during the year.

The Circus Point Hydraulic Sluicing Company, Red Hill, Sofala. Owing to the scarcity of water in the Turon River, this Company were unable to sluice during the year. Labour was employed to construct a weir across the river near the head of the supply ditch, and also to repair and strengthen the ditch and build a galvanized iron hut on Red Hill. Estimated value of plant and supply ditch, £3,600. The Company's manager, Captain F. B. Gipps, is sanguine of success when a sufficient supply of water is obtained.

The directors of the Spring Creek Gold-mining Company have resolved to call for tenders for the removal of their engine and plant, so as to ensure its speedy re-erection on the site of operation, one mile and a half westerly from Sofala.

Davis and Mannell's 3-acre lease at Red Hill, 1 mile east of Sofala. 8½ tons of quartz from this lease yielded 70 ozs. of gold; depth of shaft, 50 feet.

Wattle Flat.—Owing to the dry weather there have been no crushings at any of the mills during the months of November and December, and there are at present 100 tons of quartz ready to be crushed, which may fairly be estimated to yield about 150 ozs. of gold, which amount would have helped to swell the return for the quarter ending December.

The Surface Hill Gold-mining Company. Operations have been carried on by a few parties of tributors working the surface veins in a superficial manner; the two most successful parties obtained 38 ozs. of gold from 13 tons of quartz. There are now four small lots of quartz at the mill ready for crushing.

North of the Surface Hill Company's lease, for the distance of a half-mile, a considerable amount of work has been done on a series of small veins discovered at the beginning of the year. The veins are remarkable for carrying gold in very narrow shoots, the quartz being mixed with decomposed pyrites (locally called brown stuff). The claim-holders pick out and crush this by hand, selling the gold as obtained. The following results have been obtained from several small parcels of quartz crushed in the division during the year, viz. :—

			ozs.	dwts.	grs.
Davis and Mannell, Red Hill,	8½	tons quartz yielded	70	0	0
Tributors, Surface Hill	13	,, ,, ...	38	6	18
Mitchell & Co., Surface Hill	19	,, ,, ...	23	3	18
Mr. Headly, ,,	5	,, ,, ...	8	11	0
Mr. M'Dowall, ,,	7	,, ,, ...	12	0	0
Mr. Hotter, ,,	22½	,, ,, ...	13	0	0
Grice & Co., Whaler's Hill	16	,, ,, ...	12	1	0
Do. Big Oakey	42	,, ,, ...	34	9	0
Mini & Co. ,,	18	,, ,, ...	38	10	0
Mr. Williamson ,,	72	,, ,, ...	14	0	0
Mr. Jacobs, Solitary Reef	9	,, ,, ...	9	5	0
Mr. Biniley, Bullock Flat	5	,, ,, ...	7	8	0
Mr. Ginens, ,,	32½	,, ,, ...	20	16	12
Mr. Grice, ,,	20	,, ,, ...	15	12	12
Mr. H. Sandon, various reefs	44	,, ,, ...	15	1	12
Do. ,,	26½	,, ,, ...	13	11	0

The principal claims are held by Messrs. Dunleary, Mitchell, Headley, and M'Donald.

Oakey Creek. Grice & Co. resumed work here and obtained two crushings which went about the usual average, and have now about 40 tons of quartz ready for the mill. The OK line of reef, Mini & Co. and Williamson, crushed three lots with good returns, but the veins looking poorer and the rock being very hard they have suspended work for the present.

Bullock Flat.—As I ventured to predict in last year's report, this locality has had a good trial by several parties, but the veins have been extremely patchy and only in a few instances payable to any depth.

Solitary Reef.—Roberts and party from Hill End, with commendable perseverance, set the pumping machinery in order and partially cleared out the old shaft, but have suspended work owing to the quantity of water to be contended with. Jacob & Co., Scott & Co., also in this line of reef have each a crushing ready for the mill.

Box Ridge.—The Messrs. Hammond still continue to prospect on the Britannia line of reef with every prospect of success. I know of no miners in the division who have expended so much time and labour without any remuneration as these. In alluvial, Cole, Gaffney, & party have made fair wages during the year, but owing to the scarcity of water alluvial operations have been greatly retarded in this portion of the division.

Back Creek.—Crudine & Elkin's prospecting claim has been transferred to Mr. William Price of the Pyramul, who in conjunction with Foster Bros., have raised there from 570 tons of quartz, which yielded 200 ozs. 18 dwts. of gold. East of this mine, at Sandy Flat and Flaggy Creek, several miners have made good wages (in alluvial) during the year, but at these as well as other places in the division, work has been suspended until rain comes.

Palmer's Oakey.—In alluvial Lewis & Son have made as much as £5 per week per man, during the greater part of the year; also Dunkell and party have obtained payable wages from their sluicing claim on the creek. Several Europeans and Chinese miners are reported to be doing well in this locality.

Considering the continued drought, I am of opinion that the past year has been the most prosperous I have witnessed since I have been Mining Registrar here, although the increase in the amount of gold won is very slight, namely, 58 ozs. 10 dwts. 10 grs.

I now proceed to show the amount of gold from all sources transmitted from the division by gold escort and other means during 1880, viz. :—

	ozs.	dwts.	grs.
For March quarter	562	1	15
For June quarter	749	19	7
For September quarter	1,054	13	22
For December quarter	1,262	18	11
Total by gold escort...	3,629	13	7
By other means during the year	1,418	11	11
Total	5,048	4	18

Estimated value of gold won in the division during the year, £18,678 9s. 6d.

575 miners' rights and thirty-six business licenses have been issued by me; seven gold-mining leases have been executed, and two applied for during the year. I enclose herewith a return of all machinery in the division; estimated value, £7,700.

TAMBAROORA AND TURON DISTRICT—IRONBARKS DIVISION.

(S. Y. Smedley, Mining Registrar.)

I HAVE the honor to furnish you with my annual report for this division.

I am happy to say that mining matters have assumed a much more hopeful appearance during the past twelve months. Quartz-mining has been the chief industry pursued. Messrs. Marshall and party, of the Trickett Reef, crushed 130½ tons for a yield of 130½ ozs., being at the rate of 1 oz. per ton. Their shaft is now 80 feet deep, the reef averaging 2½ feet thick, and about the same quality of stone.

Although there are some twenty-two reefs in the division that have been proved payable, none have reached a depth of over 100 feet. The miners have at length obtained the opinions of several eminent geologists as to the probability of payable quartz being found at a depth. These were so favourable that in November last a co-operative Company, principally consisting of miners was formed for the express purpose of testing the Monks line of reef to a depth. A lease of 10 acres was applied for, and the Company are now down with a substantial shaft a distance of 60 feet. Should they succeed in obtaining payable gold at anything over 100 feet, it will create a considerable stir in quartz-mining throughout this district. Several crushings from this line of reef have lately been made, viz.:—Martindale, 10 tons, 15 dwts. per ton; Driscoll, 11 tons, 1 oz. 7 dwts. 12 grs. per ton.

There are now three crushing machines in the district—one owned by Mr. Scott and two by Mr. Boheme. At Scott's machine 263 tons of quartz were crushed, for a total of 185 ozs. 5 dwts. Mr. Cohen crushed at the Ironbarks machine 481 tons quartz, yielding 149 ozs. 6 dwts. 11 grs., and 82 tons of cement yielding 36 ozs. 10 dwts.

At Boheme's Mookerewa machine 345 tons quartz were crushed, for 65 ozs. 5 dwts., and 80 tons cement, for 57 ozs. 18 dwts.

The total quantity of gold won in the Ironbarks division is 1,598 ozs. 4 dwts. 11 grs. This does not include parcels sold in Wellington, of which I am unable to give any correct return. 624 ozs. are from alluvial workings. There are several parties of miners turning their attention to the Bald Hills, Mookerewa, where both cement and washdirt are obtained. It has been proved now that it pays to crush the cement formerly thrown away after passing through the puddling machine. At Bulga Swamp many miners are located, chiefly engaged in prospecting. Fossicking is going on to a large extent on the main creek below Ironbark township, but no large finds have been made.

Manning's sluicing claim, at the junction of Mookerewa and Macquarie, is idle for want of water. The Company adjoining, formed for the purpose of working the bed of the Macquarie River by means of a shaft on the bank and a drive under the river, have suspended operations for some time, owing to disputes among the shareholders.

During the year 1880, 248 miners' rights have been issued, as against 220 last year; one mineral lease has been applied for; twenty-eight business licenses have been taken out, and six applications for gold-mining leases have been received.

MUDGEE DISTRICT—GULGONG DIVISION.

(Mr. Warden T. A. Browne, P.M.)

THE yield of gold furnished by the divisions of the Mudgee Mining District has fallen short in a marked degree of the returns of former years. To this apparently unfavourable result several causes have contributed, chief among them, perhaps, being the exodus to Temora, which has not failed to deplete this, as indeed all other mining centres; but I am not therefore of opinion that mining operations in this rich and extensive district are tending toward permanent decline or eventual extinction; on the contrary, in no year since those of the earlier period of the Gulgong gold discoveries have more important prospecting enterprises been organized.

The unprecedented dryness of the past winter, combined with the pressure of an actual drought during the earlier summer months, cannot but have had an important bearing upon the general yield of the district.

With respect to the deep alluvial workings at Home Rule, from which results were expected in some measure corresponding to the amount of capital expended, drawbacks have occurred both in the Red Lead and the Buchanan.

This latter claim has always been looked upon with great hope and favour by the experienced miners of the gold-field, and a proportionate amount of interest was taken in the prospecting works carried on by a co-operative Company of practical miners and subsidised by the Government from the vote of £5,000 granted by the Legislature for the aid and encouragement of prospecting.

Considerable expense was incurred and no effort spared to render the testing of this supposed lead effectual. A shaft was sunk near the old one, where more than once the shareholders battled bravely with the fast in-flowing water. Steam-pumps were erected, and at a a depth of over 200 feet, after every means known to miners had been adopted, the water was apparently conquered.

Unfortunately it was but a temporary success, for one day when the "bottom" was actually reached the resistless force of the water burst in with the sand-drift which had been puddled and boxed out and in every way excluded. The sand filled in, the pumps were choked, and the water filled 40 feet of the shaft in a very short time. So rapid was the influx that the men on the shift narrowly escaped drowning. This most untoward event put an end to further labours, and the Buchanan Lead still remains an unsolved mystery.

The Red Lead, situated about two miles distant in a northerly direction, has been explored at considerable expense by a party of sixteen, among whom Mr. Samuel Blackman, J.P., has held the principal interest. This gentleman, with his usual liberality, furnished a powerful steam-engine and otherwise made contribution to the enterprise. For a considerable time very fair prospects and some payable "washings-up" have been recorded; but at present there is cessation of work, and a lack of means apparently to carry on the affair without reorganizing the proprietary. A comparatively large sum has been already expended in carrying out the present mine-works, which are faithfully executed, complete, and extensive. It is to be hoped, for the benefit of the district generally and the furtherance of legitimate mining operations, that a supply of capital may be made available for the prosecution of the undertaking. This will enable the important prospecting researches which are contemplated to be properly carried through. If only the defined lead which is believed to be in the vicinity can be traced, not only the shareholders who have already advanced so liberally will be benefited, but the future of Home Rule as a mining centre will be assured.

Though the capital of the original shareholders has proved unequal to the strain which the working expenses of so large a plant have imposed, this property might be most profitably purchased and worked under the provisions of the Act about to be added to the statute-book by one of the Members for the Mudgee District.

Of other extended claims in the same locality, to the working of which steam machinery and the co-operative principle have been applied, the outlook is distinctly encouraging. Messrs. Paul Brothers have for the third time erected their steam-engine, pump, and winding gear upon a deep alluvial lead. The party of practical miners of which they are respectively manager and chief engineer have taken up 24 acres upon the Home Rule lead, below the extended claim known as the Good Hope, originally organized by Messrs. Charlton, Hedley, and James Backhouse.

For some months the Home Rule Union shareholders have been hard at work completing their preparations. They have just now finished a main drive, and washed up a sufficient quantity of the auriferous deposit to assure them of fair profits and permanent employment.

But little below the attitude of the lofty Poppet head are to be seen two puddling machines and a large receiving tank, by which means the whole of the necessary work is done by steam-power, and the full but not excessive supply of water utilised. Cartage—that very serious deduct from profits—is by this ingenious invention altogether dispensed with.

The fact of this claim as well as the Good Hope being on good gold establishes the existence of a defined lead trending in the direction of the Britannia, and then probably making for the main channel or gutter formed by the junction of the Star and Black Lead,—the dream of the early miners of Gulgong when speculating on the Eldorado of the future.

Having regard to the number of men employed, the steady nature of the yield, and the reasonable probability of yet larger enterprises being developed from the line of the present workings, the Good Hope and the Home Rule Union must be considered to be the most truly representative and important undertakings now extant upon the gold-field. Worked efficiently, economically, and with improved appliances, they belong to a class of permanent mining properties which are tolerably certain to bring in a steady remuneration for skilled labour, manned and managed as they are by some of the most capable, experienced and intelligent miners which the gold-field has ever seen.

On the lower Black Lead the prospecting mine works in the vicinity of twenty-nine and thirty, to which a proportion of aid has been granted by the Government out of the vote of £5,000 before referred to, are now being pushed on with considerable energy. The shaft has been substantially timbered and centred as far as the water level about 160 feet, and preparations are being made for the reception and erection of the steam machinery for pumping and other purposes. The shafts sunk in this locality with great expense of time and labour, in many instances having more than 100 feet of solid basalt through which to drill and blast, were nearly all rendered useless by the inflowing of deep-level reservoirs. With the sole exception of number 44, steam machinery has never before been applied to the drainage of this country. Those who have worked on the line of the lead aver that "they left off on good gold when the water broke in on them." It may fairly be inferred that when the subterranean enemy is defeated, that the hidden treasure of the once famous Black Lead will be bared to the miner's pick and shovel, and that the glories of the erst-while Gulgong gold escorts may be revived if not eclipsed.

The mining subdivision popularly known as the Canadian, so called from the lead of that name, discovered and named by Messrs. William and Peter Paul, is generally held to include the course of the Canadian Lead proper and that of Nil Desperandum, which are on Crown Lands, in addition to the alluvial workings in Iowe's, Stott's, Smith's and Clarke's paddocks, which are freehold.

These diggings have proved to be not only among the richest but the most permanent gold discoveries made in or near Gulgong. A peculiarity common to the washdirt raised in the claims generally is its "mullocky" nature, to use a familiar mining expression, as well as the very unusual depth of auriferous deposit. This is chiefly found in "crevasses" or recesses between the enormous blocks and boulders of grey limestone which encumber the beds of the ancient watercourses. In some instances from 40 to 60 feet of washdirt vertically measured have been profitably worked. In such workings the cross-barred timber supports (technically termed "pigstyes") are viewed with astonishment by miners unaccustomed to this particular style of country. In the clefts and recesses of these rock-caverns, often embedded in the richest portions of the gold-dirt, lie the huge remains of the diprotodons of past ages and the gigantic congeners of our marsupials, mingled with the fossil fruits and seed-vessels of the now extinct genera Spondylostrobus and Wilkinsonia.

A sudden subsidence of the upper strata, completely covering in and burying the whole of the drives, shafts, and timbering of the prospecting claim of the Canadian Lead, took place some years since. Doubtless the extensive ramification of drives and galleries which honeycombed, so to speak, the lower levels, led to this disaster, which most narrowly escaped being rendered more deeply memorable by the sacrifice of human life. An accidental resolution to keep holiday that particular afternoon, I have been informed, alone prevented the presence of the usual shift or working party below. Fresh shafts have however been sunk, and many hundred loads of washdirt carted away since that day. It has been one of the most productive claims on the field, not less than 27,000 loads of washdirt having been taken out by the Messrs. Paul and their party before the profits began to decline. Even now it cannot be said to be wholly worked out, both it and the White Horse (of Nil Desperandum) being apparently of that character of mine which has always some reserve in store for industry and perseverance.

In this, as in so many other localities, excessive water, of which at the depth of 200 feet or less immense reservoirs seem to exist, has been the chief obstacle to an exhaustive rifling of these rich deposits. Time after time have the miners, running occasionally extreme risks, been compelled to relinquish their well-paid labour by the warning inroad of the dark stream ready to overwhelm them. It is much to be regretted that none of the landed proprietors of the vicinity have seen their way to the purchase of powerful steam machinery with a view to a comprehensive drainage of the lower levels. One section thus drained would of course render other claims workable, and drainage rates under a proper system of assessment would be cheerfully paid by the parties so benefited.

In no other mining centres have the prospectors and shareholders of claims been more perseveringly industrious than in the neighbourhood of the Canadian. It will hardly be considered invidious to mention in this connection Messrs. Thew Brothers (3), worthy representatives of British pluck and endurance, who have adhered to the Canadian through good and evil report, and have never failed yet to reap a fair remuneration for their labour and enterprise.

Since before the greater discoveries at Gulgong, the district of Tallawang, lying to the west-north-west, has been known to possess alluvial deposits of moderate value occasionally rising to richness. The large areas of worked and abandoned ground, chiefly shallow, with other indications, tell of comparatively large populations there located before the year 1871.

The vanished crowds are represented now but by an occasional prospecting party or the solitary often migratory miner known as a fossicker.

A somewhat important rush took place to Clough's Gully, a locality distant about 16 miles from Gulgong in a north-westerly direction, about six years since. Some of the claims were rich, and as the sinking was easy and not encumbered with rock or water, a considerable population was profitably employed for more than a year.

The most hopeful mining enterprise in the Tallawang district is situated near Clough's Gully, of which the population however has long since disappeared. A lease has been taken up of 5 acres, including an extensive and somewhat remarkable deposit of the auriferous conglomerate known by the miners as cement. Mr. Thos. Chappell, the lessee, late of Hill End and Tambaroora, has, with his usual enterprise, erected machinery on the spot, formed a dam, and thus is enabled to treat the deposit in the most economical as well as efficient manner.

This somewhat exceptional mass of auriferous drift has doubtless received original formation in the bed of an ancient watercourse, in the bends and under the bluffs of which large masses of the deposit have accumulated. It is of great depth and width, and has been worked by miners with ordinary appliances for years past; but though rich spots were occasionally found, the cartage for some miles to the nearest creek swallowed up the chief portion of profits.

The present lessee has, with closer calculation, come to the conclusion that, being able to treat his material on the spot, and to put through large quantities, he will be fairly remunerated if he be recouped to the amount of the expense formerly incurred in the carting of the cement to the creek.

It is to be hoped, for the general advantage of mining, that Mr. Chappell's well-considered investment will prove to be as remunerative as his courageous enterprise deserves, and that it will make plain to others how many justifiable speculations await in all the mining districts a judicious application of skill and experience.

Payable gold has been discovered in two hitherto untried localities during the past year, both on the banks of the Cudgegong River, and almost on the very tract of the mining army which marched to Gulgong in 1871 and 1872. The usual partial explorations had been made in both localities many years since, showing how fallacious a test the ordinary prospecting of miners not specially concerned to persevere may be.

In the private estate of the Hon. George Henry Cox, on what may be called the foot-hill of a range running parallel with and on the south bank of the Cudgegong, sufficient gold was won to keep a population of several hundred men profitably employed even when the attractions of Temora were at their height. Patches more than ordinarily rich were occasionally struck, and as the sinking was easy and shallow the returns for labour were high. The original prospecting miners had sunk their test shafts chiefly along the side of a series of small gullies or ravines which ran down from the main range towards the river. Now, the course of the lead was directly transverse to these gullies and nearly parallel to the present course of the river. In some instances the rich deposits were on the surface; in others, at a depth of 15 or 20 feet below the surface. It is a complete answer to persons who are always ready to assume that land not obviously and immediately auriferous should be thrown open to conditional purchase, that this rich deposit, almost upon the road-side, where so many thousands of experienced miners have travelled during the last ten years, should have lain thus long undiscovered.

On the Cudgegong village reserve a section of land adjoining the portion last referred to was prospected by the miners attracted by the fame of Cox's paddock, and, in consequence, a narrow run of gold was discovered in one of the flats trending towards the river. The deposit was fairly productive, but the run of gold did not show any tendency to widen or improve as it approached the river. Water being abundant and the sinking easy, a number of loads were washed with more or less success until the lead was worked out. Small quantities of gold were found about the same time in Crown Land adjoining the freehold of the Messrs. Crossing, but nothing further occurred to prove the existence of other than small and unconnected deposits.

In the returns from the district which lies to the south of Mudgee no change of importance since last year has taken place. In the vicinity of the Cudgegong River, near Apple-tree Flat, a few parties work the abandoned alluvial, and by sluicing manage to procure a scanty and precarious living. Some fair yields have been found upon a freehold of Mr. George Cadell, as also in the vicinity of Mr. Pauling's paddock, and near Stony Pinch. The quartz reefs towards Cudgegong Corner apparently are more in favour, as they are now being worked with something like former eagerness and determination.

The mineral selections lately taken up in the parish of Bocoble show a more promising state of matters, as far as copper is concerned, than any other occurrence during the past year. In portion 19 a shaft has been sunk upwards of 90 feet in depth. The lode between well-defined walls shows a body of grey ore, 3 feet in width, of which the assay stands:—Copper, 17 per cent.; silver, 7 ozs. to the ton; gold, 1 oz. 9 dwts. to the ton. This lode would seem to resemble those of Milburn Creek, which are rich in gold and silver, while the copper forms the principal metal composition of the lode.

On the No. 4 mineral selection very good surface gossan has been found. In one gully blue and green carbonates show on a surface more than 30 feet wide. Other minerals, probably silver, appear to be plentiful in admixture. Of this ore the result of the assay is not yet to hand.

This immediate neighbourhood, lying close to the track of the advancing railroad to Mudgee, has always been known to be singularly rich in minerals. The Cinnabar works on the south are unfortunately at a standstill, but enough was raised to show how rich a treasure might still be unearthed.

The valley of the Cudgegong and its tributary creeks and gullies have been proved to be richly metalliferous for a distance of more than 50 miles in a straight line,—more nearly ten times that length of frontage if its devious course were measured.

The observing mineralogist will have no difficulty in attaining to a conviction that for long years to come the district of Mudgee must hold a leading position, in her minerals as in other products, among the provinces of New South Wales.

At Bara Creek several rather rich specimens aroused the public interest some months since, and a moderate-sized rush set in, which however soon abated, leaving not more than twenty or thirty working miners on the ground. The Crown Lands so named consist of a strip of forest land situated upon one of the tributaries of Lawson's Creek, about 1 mile from Havilah and 12 miles from the town of Mudgee. The area of Crown Land does not exceed 200 acres. Upon the course of the several gullies, which trend in an easterly direction towards Bara Creek proper, several runs of gold, narrow but occasionally rich, have been found near the surface. These indications point to the fact that gold in possibly payable quantities might be found in an extensive flat in which the gullies referred to appear to expand. This, however, is within the limits of the Havilah freehold estate; and although the trustees of the late Mr. Nicholas Paget Bayly, who was proverbially liberal in all dealings with miners, would have been willing to permit miners to enter on condition, the trustees are, it is said, precluded from taking such a course during the minority of the heir-at-law. Time will probably solve this difficulty and permit mutually advantageous arrangements.

Several mining parties have been at work during the past year upon the reserve at Dungaree, a village site marked out between Havilah and Rylstone. On a flat near the creek the surface or the stratum immediately below it has been found payable, and by means of a small dam in the creek the prospectors were enabled to wash. The deposit was not stated to be rich, but it seems to have attracted other miners, by whom possibly other payable ground may be discovered. There has been a little gold found from time to time in all the adjacent country, but nothing has developed into sufficient consequence to cause a rush of any magnitude. It is highly probable however, that between this locality and Rylstone gold in fair quantity may yet be discovered. This district is exceptionally favoured as to climate, and water being nearly always procurable in the creek or marshes; it may attract prospectors in the height of the summer season when other localities are worked, by reason of heat and scarcity of water, under serious drawbacks. Gold has lately been found to the south of Rylstone, but the quantity was inconsiderable and apparently showed no indication of increase.

From time to time small parcels of gold have been sent in and reports of richer finds circulated from a thickly timbered region lying about 30 miles in a north-west direction from Gulgong, and locally known as the Tuttlan Scrub. Several shafts have from time to time been bottomed there by prospectors at from 80 to 130 feet, but without success. In this locality the soil is rich but water extremely scarce, so that the difficulty of continuous prospecting is much increased. If the rainy cycle should succeed the comparatively dry one which we have just completed, this is one of the localities where gold is almost certain to be found in payable quantity.

Great expectations were formed during the past year as to the results of a prospecting claim sunk in the neighbourhood of the Talbragar River, near Birrewa. This was bottomed at considerably over a 100 feet, upon a very promising-looking wash of fair depth and general appearance. A large number of residents of Mudgee and Gulgong repaired to the spot, and a half share changed hands at a high price. But the panning out failed to verify the predictions formed, and the prospectors, attracted by the tempting report of Cox's paddock, quitted the claim. It is by no means unlikely in my opinion, however, that a lead may be yet traced in the immediate vicinity.

The gold-producing regions which lie amid the highlands of the Meroo and Louisa Creek, now known as Hargraves and Windeyer, have suffered severely from an insufficient supply of water as compared with past years. Sluicing operations, upon which the miners who inhabit these localities chiefly depend, have been almost all temporarily in abeyance. I say temporarily, for the miners rarely altogether desert the spot wherein they believe good gold to abide. They are compelled often to seek work at a distance from the home which they have grown to love after years of capriciously requited toil—from the orchard they have planted and the plot of garden ground they have laboriously cleared; but, when times improve or the all-powerful capitalist can be attracted to their lead, water-race, or quartz-reef, they return eagerly to pursue the long-accustomed labour at the old place. As an instance of the tenacity and perseverance of the solitary miner, a class of men often found amid the ravines and watercourses of these mountain retreats, I may here notice the tunnel of Mr. Thomas Aird, a rock gallery, entirely excavacated by himself unassisted, through a close fine-grained diorite, to a distance of 340 feet. This toilsome and difficult work has occupied several years already, and may yet impinge upon a decade before he strikes the reef in hope of which his self-imposed task was commenced.

The quartz reefs both of Hargraves and the Upper Meroo have been, in the opinion of persons qualified to judge, perhaps less satisfactorily tested than any mining properties, of the value of which so much good evidence could be adduced. At Hargraves notably the reefs so long held under lease by Dr. Street—a gentleman whose experience and practical knowledge as well as scientific training entitles him to speak with authority—are still comparatively untried. They lie in close contiguity to the historical hundredweight of gold discovered by Dr. Kerr's black boy, or rather to the spot where that famous boulder so long supplied a seat for the weary and all unheeding wayfarer. Other lines of reef in the same vicinity are known to have produced crushings which, in those days of high percentages were lightly esteemed, but which would now, with improved machinery and more complete gold-saving appliances, be held to be most desirable investments.

Considerations of this nature may have possibly influenced those gentlemen (Messrs. Eisenstädther, O'Rourke, and party) who under the style and title of the "Catherine Gold-mining Company" have commenced the working of a lease, taken up around the Gully Claim, Eaglehawk Valley.

Powerful steam machinery has been, with some labour, transported over the rough roads of the locality, while some of the most recent inventions will be applied to the reduction of the pyrites, which is esteemed to be an important factor in the scale of probable profits. Among the aids to mining, possibly new to the district, are Wheeler's pans and Tyrolese amalgamators, which it is contended can extract the smallest fractional part of a grain of gold. The history of this mine records the fact of its being inundated with flood-water in the more rainy seasons of the past. The comparative dryness of the present cycle may therefore have its value, if only in aiding the exploration of the many proved auriferous deposits which excessive moisture has submerged.

The Crystal Palace Company have lately crushed from their reef, which adjoins the Catherine, a parcel of stone which returned at the rate of 16 dwts. to the ton. They are also rich in pyrites. From the South Hill Messrs. Sharpe and party crushed from 8 tons of stone, at the rate of 1 oz. 3 dwts. to the ton. The stone was carted 20 miles, there being no crushing machine nearer.

Among the alluvial workings in this district no specially large finds have been reported, though a steady average must have been won to support the comparatively full population of Chinese as well as European miners, the number of which has altered but little since last year, judging by the miners' rights and business licenses issued. Nuggets, of from 6 to 12 ounces, have been found in Hatton's Gully, long deserted as having been worked out. A puddling machine has been erected in the vicinity, which has paid well and been of service to the neighbouring miners.

In the vicinity of Campbell's Creek gold is still found, I am informed, in small quantities in lands which have been alienated from the Crown since the proclamation of the area as a gold-field. In my opinion, while disinclined to recommend the reservation from sale of so large an area, no conditional purchases should be permitted to be taken up in this locality, except under the 14th clause, by which the Minister for Lands retains the power (should such be expedient) of permitting miners to dig and search for gold, and of resuming the land on the part of the Crown, should such search result in the discovery of payable gold. Full compensation of course, in such case, may be awarded to the original holder.

No doubt exists in my mind after several years of observation, that the divisions of Windeyer and Hargraves are still richly auriferous both as to quartz reefs and alluvial deposits. Time or fortunate chance will probably guide the forces of capital in the direction of the long neglected reefs so plainly visible on the hill-sides, where doubtless promising investments lie dormant awaiting the aid of skilled labour and co-operative contribution. In years to come, although probably far away from the lonely creeks, once so populous and busy, I trust to catch the far-off echo of the stampers and the drill, and to know that the long deserted shafts and grass-grown tramways are again in actual use and occupation.

With regard to the alluvial areas, large returns might be reached and employment afforded to the miners of the district if water could be led in sufficient volume from the heads of the streams adjacent. Many of the creek-flats and deltas which have been hitherto necessarily treated in an incomplete and partial manner would doubtless pay well for ground sluicing; the cheapest of all mining methods where water is attainable.

In my opinion the Government might, by having the proper levels taken, and directing qualified officers to survey the apparently available water power, consistently aid and subsidise this section of mining industry. Grants of public money have been devoted in another Colony to the formation of reservoirs and water-races for such purposes; and I respectfully suggest that, in the localities to which I have referred, such a course of action might be initiated if not fully adopted with much public advantage. Attempts have been made, during my charge of the district, by private Companies, to use the stream waters for ground sluicing, but owing to the difficulty met with in procuring funds for the carrying out of necessary works while the investment was comparatively unproductive, the operation which had been commenced upon an extensive scale had to be abandoned.

That very promising mineral property known as the Belara Copper-mine has the advantage of being situated upon a freehold of 100 acres ; it has not been worked of late in a manner which its prospects should justify, but has not been wholly neglected. It is now occupied by Mr. George Macdonald, late of Gulgong, the original discoverer, who has erected a comfortable weather-board cottage upon the selection and appears to be bent upon permanent settlement. To him is due the credit of the discovery of what bids fair to prove an important mineral centre, there being another mineral selection to the south of Belara, besides several yet unappropriated spots bearing good indications. Like many other of the more enterprising miners, he has been unable to develop the property he has acquired, for lack of the necessary capital, and the other shareholders are perhaps not in a position to advance the cash required.

As an investment for some of the surplus capital now lying comparatively idle, one more judicious than that of Belara and other mining property of the same class could not apparently be found in any of the Colonies. Upon the high road between Mudgee and Wellington and but 25 miles from the railway terminus at the latter town, with abundance of wood for smelting purposes, even the low class ores with which the mine abounds could, it would seem, be worked to great profit. Beside the shafts lie rich and abundant specimens of grey and yellow ore, some of which when assayed showed for 40 per cent. of copper, and even more. The work already done in the mine is considerable, so that much preliminary expense might be avoided by incoming proprietors. Four shafts have been sunk, varying from 130 feet upwards; of these two are slabbed all the way. Masses of gossan meet the eye in all directions, while the assay returns show silver chiefly, but other ores which add to the general metalliferous value of the lodes. Mr. M'Donald, with the assistance of another miner, is at present merely engaged in prospecting with a view to future operations, but in the meantime raising sufficient ore to pay working expenses.

The Kaiser Mine, to which I have in former reports made reference, is situated still nearer to the terminus at Wellington, not being quite 12 miles distant from that town ; its lodes have always been rich in gold, silver, and copper, but of late it has been determined by the proprietors to work chiefly on a copper basis, and to that end the machinery has received a new adaptation, from plans supplied by Mr. Orlovich, the manager, by which increased efficiency in the saving of all the metals will be secured.

The working of the mine will be henceforth conducted upon an extensive scale, a contract having been taken for the first thousand tons of stone, with almost unlimited power of continuance at the same price. Several hundred tons of stone are already at grass, and the first instalment at the machine will be treated during the present week. Fifty men are now employed on the mine in various departments, and when in full working order I am informed that nearly if not quite a hundred will be required. The residuum from the crushings of former years, of which several thousand tons have been conserved, is understood to be rich in ore. This it is proposed to treat in a carefully exhaustive manner.

The Mitchell's Creek Mine, after being in continuous work for nearly six years, chiefly under the tribute system, and paying larger dividends than any other property of the same class in the district, is now temporarily at a standstill. This is to be regretted, as the workings have now reached a considerable depth, while the supply and quality of stone are far from being impaired. The yield from pyrites alone, the bulk of which was after partial reduction shipped to England, is understood to have contributed appreciably to the profits of the mine, which when in full work employed a large number of men. It is to be hoped that the proprietors will finally decide upon extending their operations.

It may not be thought out of place, should I here express my opinion that the whole area, extending from Belara to Wellington in a westerly course, northerly towards Spicer's Creek, and on the south in the direction of the Woolaman and Burrangong, abounds in indications of minerals of various kinds, more particularly gold and copper. Quartz reefs are to be found in all the undulating and hilly country, as well as copper ore of reasonably high percentage, some of which I have myself seen rudely smelted, while few of the alluvial flats bordering the smaller watercourses are free from traces of gold. At Jawbone, near or on a disputed selection, a party of miners who have made their living on the same creek for several years past are still working. Several quartz reefs have been opened and partially worked in the vicinity of Mitchell's Creek, but the trial crushings, though sufficiently good to pay on a large body of stone economically treated, were not thought sufficiently rich to remunerate a small party of working men. At the Woolaman alluvial diggings several parties of miners are still working on the bank of the creek, and near Merinda sufficiently good prospects have been obtained from a test claim on Crown Land to induce the owner of a neighbouring freehold to throw it open on conditions to miners this month,—an event expected by them with considerable interest.

As my present annual report will probably be the last which I shall compile as Warden of Gold-fields for the Mudgee division of the Western Mining District, I cannot conclude without placing on record, after nearly ten years' experience, my fixed opinion that rich and extensive discoveries of gold will in all probability continue to occur in the vicinity of Gulgong and within the limits of the district.

When it is considered that within that time nearly a score of *tons of gold*, of the value of one million and a half pounds sterling, have been won chiefly from alluvial deposits, it cannot be seriously held that by the use only of rude and primitive appliances hitherto availed of, the whole district, including several hundred square miles, has been completely denuded of the precious metals.

This astonishing quantity of gold has been hastily extracted from the earth in the localities where it was first discovered, and up to the present time neither the quartz reef nor the alluvial leads at the deeper levels can be said to have been worked in that exhaustive and scientific manner by which alone their true auriferous value could be accurately tested.

I feel much satisfaction, on the eve of my departure from a district wherein I have spent so many years and felt so deep an interest in the operations of mining industry, in thinking that important enterprises have been lately initiated and are on the fair way to success or accurate testing of auriferous localities. The co-operation of capital with labour must in these cases overcome the obstacles which have previously barred the way.

If such legitimate mining speculations prosper as they deserve and as I sincerely trust they may prosper, the delayed but not less brilliant second development, not rarely known in mining centres, will become a reality. Then not only Gulgong proper but the extensive mining district of Mudgee will receive a corresponding stimulus to labour, as well as an enhancement of values for property of all descriptions.

Return of gold leaving Gulgong per Western Gold Escort during 1880.

	ozs.	dwts.	grs.
January 26th	365	11	18
February 23rd	430	9	5
March 23rd	284	14	18
April 19th	152	16	11
May 17th	884	15	19
June 14th	1,074	16	11
July 12th	308	3	4
August 9th	870	8	8
September 6th	233	13	7
October 4th	835	19	18
November 1st	803	7	9
,, 29th	660	19	17
December 27th	20	7	12
	6,126	3	15

MUDGEE DISTRICT—GULGONG DIVISION.

(*H. De Boos, Mining Registrar.*)

IN consequence of the drought prevailing during the past twelve months mining matters have been very slack. Water has been so scarce that it has been a serious drawback, not only to the miner but to the whole district. The dams were all dry, and many of the inhabitants of Gulgong depended entirely upon the supply of water from the two abandoned shafts on the Red Hill.

During the early part of the year payable gold was reported in one or two localities in the vicinity of Gulgong, but the claims do not appear to have answered the expectations of the prospectors, and were soon abandoned.

At the Canadian there are several claims giving fair returns, and had the season been favourable I have no doubt that this portion of the gold-field would have shown very good results.

Mining at the Home Rule has been fairly remunerative since my last report. The Union and the Good Hope Claims, both worked by steam-power, have been yielding more than good wages. The Red Lead Gold-mining Company has ceased working and is about to be wound up. I have been unable to procure any return of the quantity of gold obtained from these claims, owing to shareholders being unwilling to give publicity to the amount of their gains.

In May last gold was discovered in Cox's Paddock, on the Mudgee River. It caused some little excitement at the time, and in the course of a week or so there were about 150 men on the ground. Most of the claims, however, were worthless, but a few paid well and are still being worked, giving very fair returns.

The Prospecting Claim on the Black Lead has been idle for some months, pending the erection of an engine on the ground. When this work is completed there will be nothing to hinder the progress of the works.

Two leases have been applied for, for quartz-mining, on the Red Hill, and there is some talk of obtaining a diamond drill to test the ground thoroughly. Should this be done and prove successful, it will have the effect of reviving mining interests in this district, and giving employment to a number of men who are now barely earning wages.

Rouse's Paddock, at Guntawang, is still a favourite prospecting ground for many of the old miners. A number of shafts have been sunk during the past year, but the continued dry weather has prevented anything like a fair washing up.

Since the outbreak of the Temora rush at least 200 diggers have left the district, and for a time it seemed as though this place would be deserted altogether. They are however, returning by degrees, and it is quite possible that most of them will come back, for although they agree in speaking well of Temora, they seem to think that Gulgong is not exhausted yet. In fact, life is easier here, and almost any man that is fairly industrious can always earn his keep fossicking in the old ground on this gold-field.

The number of miners' rights issued in 1880 was 446, and business licenses 23.

The amount of gold sent from Gulgong by escort during the past year was 7,511 ozs. 2 dwts. 4 grs.

MUDGEE DISTRICT—MUDGEE DIVISION.

(*F. J. Isaacs, Mining Registrar.*)

IN forwarding my report for 1880, I have the honor to inform you that on the whole there has been an improvement in alluvial mining in my division of the Mudgee Mining District.

The total number of miners' rights issued by me during 1879 was 162; in 1880, 245. As most of the new discoveries during the year have been on private property, I should not think that the miners' rights represent more than one-fourth of the miners at work. The most successful "rush" (if it may be so designated) on private property has been to a paddock of the Honorable G. H. Cox's, situate at Cullenbone, about 10 miles from Mudgee. From 80 to 100 men, I am informed, have been working continuously for the last five or six months, and the yield, though not large, is pretty regular; the depth of sinking is from 3 to 12 feet, and the yield is from 5 to 30 dwts. per load. This would give an average of about £3 per man per week.

A party has been recently formed for the purpose of working a quartz reef at Merrendee, which gives every indication of being a rich one. The party are very confident, and will apply for a lease.

Cooyal still finds employment for thirty or forty men. There are eight claims now at work there on payable gold at the Cornstalk Lead, the yield being 8 dwts. to the load. A prospecting party is also at work, and the men are washing ½ oz. to the load. There have been several trials at Budgee Budgee at deep sinking, but I have heard of no satisfactory results, but the following statement received from an old and experienced miner I think of some importance. He, with Government aid, bottomed on gold at 160 feet and followed the trail to 170 feet; he states that he was perfectly convinced from what he saw when he left off working that a valuable deposit lies at a depth of 300 feet. The trail of gold which he was following down would have kept the party out of debt, yielding £1 per week per man. There is no doubt but that many rich reefs pass through Budgee Budgee, but there is little enterprise here now. It is to be regretted that this trial was not pursued further, but want of assistance compelled the party to leave it.

Other successful alluvial workings have been carried on at Apple-tree Flat, Merrendee, the Log Paddock, and Pipe-clay, but I can obtain no reliable information as to the yield.

I am of opinion that private property is a great drawback to successful mining in my division, and the scarcity of water is another serious obstacle.

There are no metalliferous or mineral deposits being operated upon in my division, and the alluvial mining is principally carried on by prospectors and fossickers.

MUDGEE DISTRICT—HARGRAVES DIVISION.

(*T. O'Brien, Mining Registrar.*)

I HAVE no improvement to report, I regret to say, on mining matters in this division during the past year. Operations are confined to fossickers, chiefly Chinese, on the old alluvial workings at Hargraves and Meroo Creek.

There is no machinery of any kind, either at work or idle, in this division at present.

There have been two quartz-crushing plants in this locality up to very recently, one of which was taken to the vicinity of Gulgong, the other has been removed to Eagle Hawk Gully for mining purposes.

There was no prospecting for either quartz or alluvial in this division during 1880.

MUDGEE DISTRICT—WELLINGTON DIVISION.

(*F. Marsh, Mining Registrar.*)

IN submitting my report for 1880, on the state of the gold-fields in the Wellington division of the Mudgee Mining District, I have the honor to state that, although no new discoveries have been made of any importance, still mining operations have steadily maintained a very fair position among the gold-fields of the Colony,—the amount of gold forwarded from Wellington during the year 1880 being 2,245 15 grs. 15 dwts.; but this quantity can scarcely be said to represent the total quantity won during that period, because the gold escort was discontinued on the opening of the railway to Wellington in June last, thereby necessitating the holders of gold either to sell to the Banks or storekeepers, &c., or to transmit it themselves by private ways. A very considerable quantity has been so forwarded, I understand, by alluvial miners, and it is to be regretted that no returns can appear.

The extreme dry weather of the past winter and summer has also operated to a very large extent against the production of gold from the alluvial diggings in the various portions of this district already named in my former reports.

The quantity of retorted gold, including that from the Mitchell's Creek and Kaiser Mining Company's Crushing Plants, may fairly be estimated at about one-half of the total quantity of gold mentioned, the remainder, 1,100 ozs. odd, being the result of sluicing and alluvial operations. This may appear small, considering the highly auriferous nature of the region about Wellington; but the want of storm or surface water has had a more damaging and deterrent effect on mining operations, other than quartz-crushing, than is generally supposed. It is also much to be regretted that the operations of the Mitchell's Creek and Kaiser Mining Companies have not been so extensive, with regard to the period of their working, as such really first-class and valuable machinery is capable of doing. The returns (enclosed) however speak for themselves.

Taking therefore all things into consideration, a more promising state of affairs may fairly be anticipated for the future.

With regard to the discovery of copper close to the township of Wellington mentioned in my last report, I regret to state that the works have been abandoned—not through any want of enterprise on the part of the proprietors, but from the large outlay required to properly develop resources of such a nature.

Indications of copper have been found in many parts of this district, and works to a greater or less extent have been carried on, but not with any useful result. This is much to be regretted, as a large and profitable field for the investment of outside capital, I am convinced, lies in the future of Wellington. I may however mention one or two individuals whose efforts in this direction deserve not only to be mentioned, but to be encouraged in every possible way, viz., John Backs and W. H. Nancarrow, both of Wellington, whose perseverance and faith in the value of their undertakings augurs well for their future success.

In thus submitting my report for the past year, I cannot but express my thanks to all those gentlemen who have so readily and kindly afforded me every information in their power.

The printed forms transmitted to me are herewith returned duly filled up.

MUDGEE DISTRICT—WINDEYER DIVISION.

(*T. H. Price, Mining Registrar.*)

I HAVE the honor to report that alluvial mining in this division has suffered considerably from the scarcity of water during the past year and but little sluicing has been carried on, consequently there has been a diminution in the quantity of gold won, also a falling off has taken place in the number of miners usually located here; this has been particularly the case at Campbell's Creek, where for months men were waiting in the expectation that the alienated auriferous land there would be thrown open to mine upon; but it appears that an error was made in the deeds, and the purchase of the land could not be cancelled; the men weary with waiting and disheartened, having spent their last shilling, had to leave in search of employment. Mining at the Upper Meroo has been on the whole more prosperous than at any other part of my division. Two nuggets, one 11 ozs. the other between 5 and 6 ozs., were obtained by a miner named Parkes in Hatton's Gully; two other miners named Dickie and Ward have done remarkably well, the latter miner making for several weeks £20 per week puddling his stuff in a trough, the wash being principally clay; he, however, sold out for £85 to a miner named Snelson, who at once erected a puddling machine, and I am told that the returns for the first fortnight after starting work recouped him for his outlay.

Quartz-mining.

I have much pleasure in reporting that there is every prospect of some of the known auriferous reefs in this division being thoroughly tested; some Victorian capitalists, introduced by Messrs. O'Rourke and Eisenstaeder, have taken up the old gully claim at Eagle Hawk Gully, Clarke's Creek, and are now preparing to erect the machinery for draining the claim and for crushing the stone with all the latest appliances for the extraction of the gold from the pyrites, which, if successful according to their anticipations, will open a new era in quartz-mining in this locality.

The Crystal Palace Co. have lately crushed 50 tons stone from their claim, which returned 42 ozs. of gold; this lease adjoins the one Messrs. O'Rourke and Eisenstaeder have taken up, and there is a considerable amount of pyrites in the stone, but having no machinery for saving the gold therefrom it was lost, otherwise their returns would doubtless have been more gratifying, as from several fire assays made their pyrites gave at the rate of from 5 to 10 ozs. per ton. Messrs. Sharp & Co., from their claim, on the South Hill, Eagle Hawk, took out 8 tons and carted it to the Crudine (20 miles) to be crushed; it gave 1 oz. 3 dwts. to the ton. This claim was worked eight years ago, and when tried went 16 dwts. to the ton.

Having in view that the very best and latest appliances for saving gold from pyrites are now in the course of erection on Clarke's Creek, and with the knowledge of the number of reefs that are gold-bearing in this division, nearly all of which contain a large percentage of pyrites, which hitherto have been manipulated in a crude state and hence considered not payable, I think I may safely assert that few places in the Colony present a more promising field for the profitable outlay of capital; and I venture to predict that at no distant time the hills around here will resound to the miner's blast and a busy population take the place of the solitary fossicker; and while the worker and the capitalist are being remunerated, confidence in quartz-mining will be established and thus conduce to the advancement and wealth of the Colony.

Herewith I enclose returns of men employed, and estimated amount of gold won.

Miners' rights issued during the year—Europeans, 123; Chinese, 99. Total, 222. Business licenses, 30.

LACHLAN DISTRICT.—TEMORA DIVISION.

(Mr. Warden Sharpe, P.M., Temora.)

I HAVE the honor to submit, for the information of the Honorable the Minister for Mines, my report for the past year on the Temora Gold-field.

Since my report of August last was furnished, many changes have taken place here, and this may now be termed a settled township. I came here on the 10th of August last, and found all the confusion that must attend a new and extensive rush. Business places were only in course of erection, and the only building available as a Court for hearing mining cases and afterwards Police Court business was a small iron building capable of holding perhaps forty persons, and utterly unsuitable and insufficient even for a public office. This place, however, had to be used for want of a better until the Government Court-house was finished, in November last. This is, I am glad to be able to report, a very comfortable and commodious building, and suitable for a warm climate—as this undoubtedly is. Shortly after my arrival here I established a Police and Small Debts Court, and the amount of business transacted in these Courts is large. From August up to the present time 396 police and summons cases have been heard and decided, and in the Small Debts Court, which was established on the 20th of October last, 140 cases have been disposed of. The whole number of mining cases heard by my predecessor Mr. Warden De Boos and myself was 200. As regards the latter, I have considered it my duty to discourage litigation as much as possible, and I have, where I could equitably and legally do so, tried to settle mining disputes without bringing them into Court. In this, I think, I have been fairly successful, and the number of mining disputes is not large if we take into consideration the large population that has been located here since the field first became known,—a population not less at one time than from ten to twelve thousand, and also considering that this is an alluvial field, where the sinking is easy and comparatively shallow. As I have already stated, the population has fluctuated a good deal. In last August I should put the number down at about 6,000, but later in the year I believe it reached as high as 12,000; at the present time I should estimate it at about 5,000. Should heavy rain set in and water become plentiful, I should not be surprised to see 20,000 people on this gold-field. There are three townships here almost connected; what is known as Middle Temora is the Government township; Upper Temora is almost deserted, but Lower Temora still contains a good many business places, although the population has considerably thinned of late. The Government town is very well laid out and is in a good situation; the streets are wide, and, what rarely happens in a gold-fields township, straight. The business places are mostly of iron, numerous and large; hotels are especially plentiful in Temora, there being upwards of sixty. I think it is much to be regretted that business people should have been permitted to settle on what is known as the lower township, as the place is very low, and in case of heavy rain I am confident that the town would be flooded. There is no escape for the water, which would lie until it soaked in or evaporated, and probably cause disease and loss of life. The business places too, being right on the main lead, give rise to many disputes between the business people and the miners. For these reasons it would have been better, if it was necessary to provide more room for business places, to extend the Government township on to the high land which lies immediately to the west of the lower town. As regards climate I do not think that Temora is an unhealthy place, as the death-rate will show, but it is intensely dry and very warm during the summer months. The highest that I have known the thermometer register was 115° F.,—this occurred in the middle of last month. Up to November last the weather was very cold, especially at night.

The great drawback to the prosperity of this place and district is the want of water. There are no creeks or rivers, and it would appear that the place must be dependent for water supply on the rainfall, which I believe occurs at very irregular intervals. Since I came here there has only been once what would be called a heavy rain, which lasted for about a fortnight, and unfortunately at that time there were few reservoirs or dams made to retain the water when it fell. Heavy thunderstorms occur occasionally, but these generally only extend over a limited space. I am informed by squatters and others who have lived in this district for a considerable number of years, that they have seen the low lands about Temora covered with water to a depth of 6 inches—the result of a thunderstorm. Should one of these storms occur now—as a great many large dams and tanks have been constructed in this neighbourhood—I think, unless a very lengthened drought occurred, there would be little reason to fear, but that water would be plentiful both for gold-mining and domestic purposes. The ground in this locality is admirably adapted for conserving water, as the dams merely require excavating—puddling is not necessary. The nearest creek to Temora is the Yeo Yeo or Bland, and its nearest point to here is about 20 miles. The Bland Creek contains permanent water, but is merely a chain of deep waterholes. The other creeks, if they can be called such, seeing that their course cannot be traced continuously, and that they only contain water where dams have been made in the watercourse or depression of the surface, are the Narrahburrah or Deep Creek, and the Walladilly or Trigalong Creek. These watercourses lie east and west of Temora, at a distance of 5 and 2 miles respectively. There is, 6 miles from Temora, on the Narrahburrah Creek, a large dam, from which most of the present supply of water for the town is derived; there is also another large lagoon near the Temora Station homestead on private property, and at this puddling mills have been erected and a considerable quantity of wash-dirt has been put through them; there are also a good many other dams on different parts of the Temora Run which have supplied the town until lately, but these are exhausted now, except a very few. As I have already stated, the chief supply is derived from the Narrahburrah Lagoon, which is distant 6 miles from here. This cannot—unless heavy rain comes down—last long, as an immense quantity of water is daily taken from it. Water is now being sold here at 3s. 6d. per cask. It is, no doubt, far from pure; but so far the population do not appear to have been injured by the use of it. I may state that the water that will be in future collected in dams lately constructed will be of a much purer nature than that now available, as the sheep having been mostly removed from the neighbourhood, their manure will not exist to pollute the water in the new dams or reservoirs. A supply for drinking purposes will be obtained from the iron roofs of the houses, which are mostly provided with spouting and large underground tanks. While writing of water supply, I am informed that there are springs of good water to be found about 10 or 12 miles from here, from which, if the supply was sufficient, water could be gravitated to this place, and I think that it would be advisable that these springs should be examined and tried by some experienced person, to ascertain whether they would increase the supply of water for mining and domestic purposes.

I will now endeavour to describe this gold-field. The first rush to Temora set in, I am informed, on the 3rd of February last, when gold was discovered on the surface at Upper Temora. Some payable shallow ground was discovered, and by degrees the lead was traced for a distance of about 3½ miles. This is the main lead, and its bearing is about north and south. The lead took its commencement where there is a large body of quartz and reefs; it is bounded on either side by quartz reefs cropping out on the surface, a few hundred yards apart. Until lately the payable claims on the lead were very irregular, both as regards width and distance apart. Gaps where the run of gold could not be traced existed for a distance of as much as half a mile, but now the claims are connected nearly the whole length of 3½ miles. The gold found is mostly coarse and jagged in general, not water-worn, and some of the nuggets contain a considerable quantity of quartz. The quality of the gold is good, bringing at the Banks £3 17s. per oz. I am of opinion, after careful inquiry, that the lead is supplied by small leaders diverging from the large reefs bounding it. Where these leaders come in the claims are often very rich. I may here state that the country is what miners call rolling country, because the bottom occurs at varied depths. The sinking is good, mostly through red or white pipe-clay and very dry. The prospecting claims on this lead are as follows:—1st, Parker's, going north, Tynan's, then Murray's, and 4th Maloney's. The depth of sinking varies from the surface to 112 feet, though there may be a few shafts over this depth. I will endeavour to describe each of the prospecting claims in turn, and a few of the principal ordinary claims. There are besides the main lead or run of gold other gullies where gold has been obtained, but so far I believe without payable results.

Parker's Prospecting Claim.—This, the prospector asserts, is the first alluvial prospecting protection area taken up on Temora. It is situated 14 miles due west of Woodstown, and Henry Parker took up his protection area about the 17th of November, 1879, reporting payable gold on the 3rd of February, 1880. His party washed 8 dishes of dirt, and got from 2 to 4 grains to the dish. This gold was very fine. The depth of sinking in this case was in one shaft 60 feet, and in another 75 feet. The wash is from 4 to 5 feet in depth, with a width not yet established, but proved to a distance of 40 feet, with 120 feet of a face. Four men have been employed continuously up to the present date. Parker and party have raised altogether 600 loads of washdirt. Only two loads have been washed from this claim, which yielded 6 ozs. and 18 dwts. A load of headings taken about 6 feet from the bottom went 4 dwts. and a half. The prospectors state that there are three leads of gold running through their claim—a surface lead—one east and one west which carries most gold, and one running north and south. Henry Parker informs me that he found colours in the reefs, at what is now called Upper Temora, twelve years ago, and this led him to prospect in 1879. There are thirty-two or thirty-three ordinary claims payable south and east of Parker's. Foster and Company and Stinson are considered the richest, although there are several others perhaps quite as good. The distance from the first surfacing claim to Parker's prospecting claim is about ½ a mile. The surfacing claim known as M'Cormack's gave 27 ozs. for 60 loads, and the depth of wash-dirt was 18 inches. A very large quantity of surfacing has been washed, and gave an average of 6 dwts. Going north from Parker's is the Golden Gate, six men's ground, or 300 feet by 300 feet. This party has washed 200 loads of dirt, which yielded nearly an ounce to the load. They have about 500 loads on the surface, which is considered 1 oz. stuff. The depth of wash is from 7 to 17 feet, taking out about 40 feet in width. This claim was bottomed at 125 feet. In No. 2 North, Shaw and party, the wash-dirt on the surface would reach, I am informed, 600 loads. A trial washing of 56 loads gave 77½ ozs. In this claim there is 6 feet of wash by an unknown, as yet, width.

No. 3, Foley and party, have, it is estimated, 1,000 loads on the surface. The prospects in this mine are good, as high as ½ an oz. to the load having been got. No. 4 have had two trial washings, one not payable, and the other of 50 loads giving 7 dwts. to the load. I may mention that there are one or two rich claims between No. 4 and Tynan's. The next prospecting claim I propose to describe, viz., Yankee Charlie's and Colburt's. In the former the proprietors have raised 800 loads, and have picked out a considerable quantity of coarse gold; in the latter, Colburt's, about 500 loads are at surface, from which nuggets of considerable size have been obtained.

Tynan's.—Tynan's prospecting claim is situated nearly a mile below Parker's, and about ¾ of a mile from Murray's prospecting claim, and the protection area was taken up early in May last year. Payable gold was reported on the 5th of July. At a depth of 70 feet wash averaging 3 feet deep was discovered. The width of the run in one portion of the claim was 80 feet, in another 120. The prospects obtained when payable gold was reported was from 3 to 6 grains to the dish. This return is an average from eight dishes. Some coarse gold was found from 7 to 15 dwts. in weight. Messrs. Tynan and party have about 2,000 loads of washdirt raised, but have not as yet had any trial washing. They report the gold to be evenly distributed through the wash. A great deal of work has been done on this claim. Seven shafts have been sunk averaging 70 feet in depth, and the owners are now taking out nearly 100 feet square of wash, working two faces at either end of the claim; 11 men are employed. This claim is described as on the main gully, but fed by leaders from the reefs which bound it on either side. In the adjoining claim, north (Finlay and party), spare ground, some very coarse gold has been found—one 10-oz. nugget, besides some smaller ones. This party have raised 100 loads, that will probably yield from 15 dwts. to an ounce to the load. In No. 1 North (Welsh and party) coarse gold has been found, and they have raised about 1,400 loads, as good or perhaps better in quality than Finlay's. No. 2 North (Moran and party) have in their claim about 4 feet of wash, and have about 800 loads estimated payable. In No. 3 and 4 North the owners have about 1,000 loads each. Payable gold has been traced all the way between Tynan's and Murray's prospecting claims, but it is impossible to describe each claim. Going south from Tynan's, payable wash has been got in eight claims, and each party have raised from 200 to 800 loads of wash.

Murray's.—The protection area of this claim was taken up on the 19th of February, 1880, and payable gold was reported in May following. The prospects washed were 3 or 4 dwts. to the dish for three dishes. The depth of sinking is 76 feet, and the depth of wash-dirt from 6 to 7 feet, and the width 60 feet. The owners of this claim have nuggeted out about 60 ozs., and washed one load of dirt and prospects. The load gave 4 ozs. 12 dwts.; the prospects yielded as much as 6 ozs. to the bag, or about two buckets. The quantity of dirt at the surface on this claim is about 1,100 loads. Six men have been employed from the time the claim was first taken up. In No. 1 North (Gradon and party) the prospects are very good; they have picked out a good deal of coarse gold, and have raised about 1,300 loads.

The next claim I shall describe is that known as No. 1, or the Squatter's, and No. 2, north of Murray's. In this mine three shafts have been sunk, about 82 feet each in depth. The washdirt, I am informed by the proprietors, is from 9 to 6 feet deep, and prospects about the same from top to bottom—that is, from 2 dwts. to 1 oz. to the dish. About 300 ozs. have been picked out of the washdirt. Amongst this gold there was one nugget weighing 67 ozs. some odd pennyweights and grains, and others weighing 30 and 20 ozs. As much as a pound weight to the bucket has been washed from this claim. A thousand loads of washdirt have been raised at the date of this report. In the main shaft of Bourke's claim a large reef about 7 feet wide was struck, well defined, and apparently a good quality of stone. On the cap of this reef some very rich specimens were found, estimated to yield 6 ozs. of gold to the pound weight of stone.

Moloney's Prospecting Claim.—This claim is situated half a mile north of Murray's prospecting claim, and was taken up early in May last. Payable gold was reported early in July; eighteen dishes yielded half a pennyweight to the dish, with 1½ foot of washdirt. The depth of sinking is 86 feet, and four or five shafts were sunk before payable wash was discovered. Six men are employed, and they have raised from 700 to 1,000 loads of dirt, which they estimate will yield, at a low estimate, ½ an ounce to the load. Except the prospects I have mentioned, there have been no trial washings. No. 1 north of the prospectors have washed 70 loads, which yielded 13 dwts. to the load, and have about 200 loads ready for the machine. The principal claims below Maloney's prospecting claim, which is the last prospecting claim on the lead, are Keating's and Adams', Buckley's, and that known as the Navvies'. Keating and Hayes' claim has been proved, so far, to be the richest on the field. It is an ordinary block claim of six men's ground—that is, 300 feet × 300 feet. The fortunate owners have nuggeted about 1,150 ozs., most of it heavy gold. They have 600 loads of washdirt at surface. Messrs. Buckley and party come next north, and they have picked out, I am informed, between six and seven hundred ozs., and have raised about 650 loads of wash-dirt. East of Keating and Hayes' and of Buckley and party is another rich claim, known as Nugent and Adams'. This party have picked out between 400 and 500 ozs., and have 500 loads of washdirt at grass.

The Frontage Lead.—There is another run of gold besides what is known as the main lead, and great hopes were entertained that a deep lead had been discovered. The Deep or Frontage Lead lies about two miles east and parallel to Moloney's prospecting claim. The prospectors are Messrs. Craig and party, who reported payable gold last September. Their shaft is over 150 feet deep, that is, deep enough to bring the holding within the frontage system. I am informed that Messrs. Craig and party have picked out about 30 ounces in coarse gold. They have had a trial washing, but I believe the results are not encouraging. I may state that water has been discovered on this lead, at a depth of 170 feet, in two shafts, about half a mile apart. In one of the shafts I am informed there is 20 feet of water, but that it does not make fast. The water is very brackish, but may prove useful if in sufficient quantity for puddling purposes.

Quartz Reefs.—I shall make but brief mention of the quartz reefs at Temora, for the reason that but little work has been done on any of them, the miners' attention being chiefly directed to the alluvial; but lately, owing to some rich specimens having been found in the claim known as Bourke's, more attention has been paid to reefing, and a good many claims have been taken up, but until the various reefs have been prospected and machinery is erected to test the stone I am afraid we shall know but little concerning the value of the Temora reefs. Bourke's Reef (concerning which a good deal of interest has been manifested) was first discovered about twelve months ago, but there are some old workings on another line of reef close to it, which was prospected upwards of ten years ago by Messrs. Fitzpatrick and party. Bourke and party struck their reef at a depth of 15 feet; they have sunk about 25 feet, and the reef is 2 feet wide, showing gold freely through the stone. South, and adjoining Bourke's claim, is that known as the Amelia Company, who have sunk a shaft 80 feet, intending to catch the underlay at about 100 feet. There are other claims on Bourke's line whose prospects are reported as encouraging, but I am not able to give any particulars concerning them. On Rich's Reef, which is about half a mile west of Upper Temora, four claims are taken up—in all twenty-two men's ground, that is, 1,320 feet on the line of reef, which averages 4 feet in width, and bears east to west, underlying north. Smith and Meurant are the prospectors of Rich's line, and in their claim some stone which appears to be payable has been raised. The deepest shaft on the line, I am informed, is 25 feet perpendicular. A good deal of prospecting is being carried on in this neighbourhood, but so far no discoveries have been made which need special mention.

Conclusion.—In conclusion, I may state that there is reason to suppose, from the discoveries already made, that this is a payable and probably a rich gold-field, but nothing certain can be known as to its value until water for washing the dirt raised can be procured. In many of the claims there is a great depth and width of washdirt, but I am afraid that in some instances great disappointment will ensue because too much dirt has been raised. By this, I mean that the stratum of payable wash does not extend the whole depth or width of the gutter: whether it does or not can only be ascertained by actual trial. The coarse gold and large nuggets that have been picked out of the dirt in some of the rich claims will ensure this field a thorough prospecting for a great distance in all directions, and this research will probably be the means of discovering other and possibly deep leads. I have caused careful inquiry to be made as to the quantity of washdirt actually raised on this field, and the return is about 65,000 loads. This quantity, it must be borne in mind, could easily be doubled and perhaps trebled in a very short time, as many of the mines have been so worked as to allow a large quantity of washdirt to be easily produced, should that already raised prove payable. I am informed also that there is a very large quantity of surfacing in the vicinity of Temora, which would pay wages if water was plentiful and cheap. Some very large nuggets have been found in various claims on the main lead, but it will not be necessary to give the weights of all of them, as this information has doubtless already been supplied by the Mining Registrar. The largest I have seen are as follows:—99, 76, 68, 50, 46, 28, 24, 16, and 14 ounces respectively. A great number of nuggets weighing half-an-ounce and upwards have been found. It is impossible to ascertain the quantity of gold won on this field since it was opened, but I can account beyond all doubt for 5,265 ozs. 8 dwts. 13 grs. Besides this doubtless a considerable quantity has been found, but no reliable or indeed any record has been kept, the Banks not having opened here until July last. The number of payable claims on Temora at the present time is, as nearly as I can ascertain, 97.

I am of opinion, as I have already stated, that this is a payable field, and capable of supporting a considerable population, but there can be no doubt that it has been much overdone. Miners and business people have been too sanguine, and Temora will probably, as other gold-fields have done, have to pass through many changes before it settles into its true position. I am afraid too that many of the business people who have invested too largely and hastily will have cause to wish that they had never seen the place. Temora has grown too fast. There is a town here that seems to have sprung up as if by magic; what a few months ago was a thick pine and sifting scrub, is now a large, well laid out, and populous town, which a stranger could easily conclude had been in existence many years. The finding of large nuggets, whose weight is often greatly exaggerated by the newspapers, whose correspondents are not always chosen from the most truthful of the community, and who do not sufficiently reflect on the effect such reports produce and the ruin and misery they cause, is sure, in spite of past bitter experience, to cause a rush; thousands leave their homes, and business people plunge into a trade and provide stock, incurring an expense that the prospects of a new and untried field do not justify. After a time there is a reaction—people rush away as fast as they came—and the field is partially condemned before it has had a fair trial. It seems strange, I may remark, that on a gold-field most people do not think it necessary to exercise that caution, before they incur large expense or liabilities which they would certainly bring into play under any other circumstances; it is neck or nothing, without consideration of consequences. I may safely state that the large rush that has taken place here has been caused in a great measure by the fact that it is a long time since a rush of any consequence has taken place in the Colonies, and doubtless many miners in these and other Colonies and countries have been waiting for an opportunity to follow a pursuit which is rarely forsaken when once taken up.

The prospects of Temora may be summed up in a very few words. The field appears to be extensive. If water can be obtained and the washdirt, which is plentiful, is payable—and there is good reason to suppose that it is—a considerable population will certainly settle permanently here. The land in this district is very good and extensive, and after the gold-field is exhausted it will be available for agricultural and pastoral purposes. Carriage is cheap, the railway being close at hand, from which a tramway could easily be extended—the country being almost level to Temora—at a comparatively small expense. With these advantages Temora should before many years are past become a populous and prosperous place and district.

LACHLAN DISTRICT—YOUNG DIVISION.

(*Mr. Warden Robinson, P.M., Young.*)

I HAVE the honor to report that gold-mining operations in the Young division of the Lachlan District for the year 1880 have been comparatively laid aside, the Temora field having absorbed nearly the whole of our mining population. A few have still remained in Young, some—fewer still—have held on at Wombat, and those—even less in number than at Wombat—pursuing their avocation at Blind Creek, Murrumburrah, are mostly working on terms in private ground. The season, however, has been so dry that few opportunities have been afforded for sluicing, which is the only mode pursued hereabouts for winning gold. I may mention that Tonking's party has, in a very praiseworthy spirit, persevered in completing their underground tunnel, and are now operating in new ground at Possum Flat. They report having at present fair prospects of making their undertaking remunerative.

Minter and party—a Company in embryo—are using the Government boring-machine on Burrangong Creek; they have already reached a depth of 70 feet. The parties chiefly interested in this movement are experienced miners, and appear to be sanguine of succeeding well in their prospecting enterprise. The gold purchased by the Banks in Young for the past year amounts to 1,865 ozs. 9 dwts. 14 grs., and of the net value of £7,237 15s. 9d. Of this quantity, probably four-fifths of it came from Temora and Barmedman. For the period above stated—1880—there have issued from this office 355 miners' rights and 34 business licenses, mostly for persons proceeding to Temora.

LACHLAN DISTRICT—FORBES DIVISION.

(*F. S. Osborn, Mining Registrar.*)

THE anticipations entertained by me of a larger yield of gold being won this year as stated in my last year's report have not been realized, occasioned by the stampede of miners within my division to the Temora Gold-fields, numbers of whom have not returned, and also the stoppage of the South Lead Gold-mining Company; they being unable to overcome the influx of water, were obliged to obtain more powerful pumping machinery.

I will now give you a *résumé* of the mines worked during the year within my division.

Alluvial.

South Lead.—The South Lead Company's mine was swamped out at the close of last year, thus involving the necessity of extra machinery, and after much delay through the apathy of shareholders in subscribing capital, pumping machinery was at last obtained.

This Company has now a very extensive plant, consisting of one 14-inch cylinder-engine with Cornish boiler 18 ft. long 5 ft. in diameter attached, working two cast-iron puddling machines raised 24 feet from the ground, with large gearing overhead, and attached to the engine by a belt 70 feet long by 1 foot in width. The Company also possess one 14-inch cylinder-engine with a boiler 22 feet 6 inches long by 6 feet diameter for winding, which raises dirt from the mine by means of trucks and cages with large flat hemp rope. The Company have likewise at work one 16-inch cylinder pumping-engine and boiler 22 feet long by 6 feet 6 inches in diameter, also a set of cast-iron pumps 8 inches in diameter, which raises the water from a depth of 247 feet.

The underground works of this Company have been extended chiefly north and west by means of under-levels ; these drives have already proved the South Lead gutter to be over 350 feet in width, all of which is a well-defined bed of gold-bearing washdirt of an average of 2 feet 6 inches in thickness, and yielding from 3 to 10 dwts. per load. It is said that this extensive South Lead gutter must be thoroughly drained before it can be worked successfully ; it is therefore considered advisable to sink another shaft on the property, and attach thereon another large plant consisting of steam winding, pumping and puddling machinery ; and there is a scheme now being devised to raise an additional £20,000 capital so as to thoroughly place this large and valuable tract of country in thorough working order.

Queen's Lead, near Forbes.

On this lead a great deal of work was done at the commencement of the year, and the miners seemed satisfied ; but all at once a rumour spread that gold had been found at Temora, when the whole of the miners on this lead rushed off to that place, with the exception of the Prospectors and Nos. 1 and 5 South, who remained and washed between them 1,000 loads of washdirt at Mr. Mathew T. Pratt's puddling-machine, which is erected on the ground ; the yield from same was 400 ozs. of gold, valued at £1,350. No. 1 South after their last washing could not withstand the temptation, and they also departed for Temora leaving ground that would wash from 8 to 10 dwts. to the load.

The Prospectors and No. 5 South still continue to work. No. 5 South in driving, struck water, which came in so fast that they could not overcome it without a whim, but being miners without means, had to abandon their ground, leaving only the Prospectors on the lead. A drought having set in and the dam dry, they also had to leave ; but I am of opinion that every foot of this lead will be again worked as soon as there is water to wash.

Matherson's Lead, Bald Hills, near Forbes.

No work has been done on this lead during the year, as Hey and party were unable to overcome the water without machinery ; they therefore re-marked their ground and converted same into a gold-mining lease, which has not yet been issued. In the meantime they are endeavouring to form a Company to work the three leases now taken up on this lead.

I still believe this lead to be rich in gold, but must be worked by a Company, as the ground is deep and a large quantity of water to overcome.

Thompson's, Madman's, Caledonian, and Grassett's Leads.

These leads have been worked off and on during the year, and small parcels of gold obtained therefrom. They are worked by fossickers, who can always obtain a little gold, and are a means of livelihood to a number of miners when out of employment.

Quartz reefs.

No work has been done on any of the quartz reefs within my division during the year, in consequence of there being no quartz-crushing machinery nearer than Parkes, and carting to that place being too expensive. Strickland and Bald Hills Reefs have been applied for as gold-mining leases, but the same have not yet been issued. No minerals or metals other than gold have been sought within my division during the year.

397 miners' rights and 47 business licenses have been issued.

Remarks.

The great drawback to this gold-field is that nearly the whole of the leads when they reach deep ground are found to contain large quantities of water, which cannot be overcome except by Companies with large capital and powerful machinery, otherwise, although known to contain payable gold, must remain idle.

LACHLAN DISTRICT—PARKES DIVISION.

(*W. C. Weston, Mining Registrar.*)

I HAVE the honor herewith to transmit certain statistical returns containing information relating to this portion of the Billabong Gold-field extension; and in doing so it affords me satisfaction to have to report a continued prosperity of this very promising district; and although the advance has not been so marked as I would have wished, or as it ought to have been, still there are one or two causes which will explain this.

1st. The exodus of miners to Temora, which commenced some six or seven months ago. At one time it appeared as if Parkes was to be deserted; and although many were the cautions given to the miners by the Press and others, still the distant gold-field Temora and the glowing reports seemed to hold out hopes of success they could or would not resist; many have, however, returned, and are about settling down to the old quiet life.

The other cause is the drought; all the dams in the vicinity of Parkes are quite dry and have been so for some weeks, with the exception of the Bushman's, and this is only used for domestic purposes and the watering of stock. Whether it was ever intended to accommodate the hundreds of thousands of travelling sheep and cattle this deponent sayeth not, but I do say they have done an immense amount of damage to the dam and fence, and rendered what little water is left in it quite unfit for the inhabitants to drink. This matter should I think be looked to, as hundreds of people are dependent upon this dam for drinking water.

In spite, however, of these drawbacks, the gold won in 1880 tots up—5,005 ozs. 13 dwts. 11 grs., against 3,589 ozs. 18 dwts. in 1879; and had the 1,000 tons of quartz now at grass been crushed and the numerous paddocks of washdirt washed up, I feel confident I should have been able to have sent a return showing another 1,000 ounces to the amount above mentioned.

Quartz-mining during the past year has advanced rapidly, and is becoming a permanent means of obtaining a living. It was viewed at first with some prejudice by a certain class of alluvial miners, but the return of gold has convinced them it is worth trying, and is not so full of blanks as sinking duffer holes.

The Parkes Quartz-crushing Company's engine has crushed 3,738 tons of stone, yielding an average of 10½ dwts. to the ton, and a total of 1,962 ozs. 9 dwts. of gold. The stone was obtained from eight different reefs, and from the surface to a depth of 170 feet. Some very rich specimens were obtained in Tabbott's & Co.'s Bonnie Dundee claim. 38 ozs. were sent to your department, and they proved to be half gold, as there was 19 ounces in them. I am confident that reefing in this district is only in its infancy. Hundreds of reefs crop up in all directions, and the amount of gold obtained in former years from the alluvial augurs well for the prospect of rich reefs being opened up as time progresses.

A second quartz-crushing plant has been started by private enterprise on the Tichborne Lead; it is at present engaged in crushing tailings, 10,000 tons of which were taken up by the owner of the plant (Dr. Austen). The result has not been communicated to me, nor could I on making inquiries obtain any information. I imagine from this it is not a very payable speculation, and no doubt the owners will throw open their plant to crush for the public. It will not, however, interfere with the Company's plant in Parkes, as Austin's is some 7 miles distant, and plenty of quartz can be got in its neighbourhood.

Ninety claims were registered in 1880, against forty-two in 1879, and 545 miners' rights in 1880, against 447 in 1879. These figures show a steady progress.

Jones and Leighton's party, who hold the best quartz claim on this field, are still raising good stone. They have had several crushings during the year just ended, but they decline to give any information of their gains. There is a rumour current that their stone averages 1 oz. to the ton, and as the reef is 3 feet thick and stone easily got, they have a fortune before them. The claim is situated at Currajong, about a mile from Parkes.

Of alluvial mining I have nothing fresh to report. Fulton's lead at present seems to be the favourite locality. There are between sixty and seventy miners there now, and some are getting good gold. Brown and Watt, who have been working here some eighteen months, washed thirteen loads for 17 ozs. a short time since, and all the miners that are on gold are getting it in payable quantities. It is, however, old ground, and will not last long. Mitchell and Frampton, at the Ben Nevis, still continue to get good returns.

There are about 350 miners at work on the alluvial, and about sixty engaged in quartz-mining. I, however, look to the latter to become the most important industry, for it will take many years to properly develop the reefs and then years to work them, while the former is soon worked out, and then the population are on the look out for fresh fields and pastures new.

No new rushes have taken place about here during the past year, and I am not aware of any prospectors being out. At all events until rain falls they cannot go, as there is not any water in the bush.

I have nothing to report *re* copper or tin mining.

LACHLAN DISTRICT—CARGO DIVISION.

(*R. Hutton, Mining Registrar.*)

THERE is nothing new to report in mining in this division during the year. The gradual falling off referred to in other reports has still continued. The rush to Temora drew away a good number of miners for a time, but the majority of them have returned to their old haunts.

After the Harrie Wood prospecting area was abandoned the miners were not satisfied that the ground was thoroughly proved. Claims were pegged out in all the fancy spots, and about twenty men spent about four months trying it still further. Encouraging prospects were got, but it would not yield satisfactory returns at the puddling machine. It is now abandoned. The miners proclaim it a complete "stringer."

The alluvial miners have now nearly all returned to the old workings on Gum Flat. Two parties, viz., Holden and party and Stickley and party, have got into the old perpendicular vein, which promises to return pretty well. Odgers and party have also got encouraging prospects. During the year about 1,500 loads have been got and washed, yielding about 250 ozs. of gold, or a little over 3 dwts. to the load. About twenty-four men have been employed in this branch of mining during the year.

There has not been much done in reefing. The Ironclad Company have been idle the greater part of the year. They have now amalgamated with No. 1 South. About five men have been employed during the last three months putting the mine in order, and the men assure me that the prospects at the extreme depth are better than in any part of the ground. The manager, Mr. J. Campbell, has met with a severe accident, several of his bones having been broken; he is consequently laid up, and the mine idle.

Several other reefs have been partially worked during the year. The following is the result of their crushings:—

Rise and Shine Reef—Roberts and Thomas—8 tons yielded 12 ozs. 11 dwts.
Homeward Bound Reef—Nelson and Duff—17½ tons yielded 33 ozs. 12 dwts.
Dalcooth Reef—Thomas and Clerk—20 tons yielded 27 ozs.
Dalcooth Reef—Elder & Co.—8 tons yielded 18 ozs. 18 dwts.
Phœnix Reef—Elder's lease—6 tons yielded 12 ozs. 10 dwts.

These results will bear out the opinion expressed in my last report, that when men of experience and capital turn their attention to the reefs of Cargo, a better future may be expected.

A claim has been taken up on the old workings at Boney's Rocks by Thom and party. They have had a crushing of 23 tons, which yielded just 23 ozs. of gold, or 1 oz. to the ton.

A reef has been discovered in Mr. Osborn's private property, near Canowindra; it is being worked by Townsend and party. They had 20 tons crushed, which yielded 17 ozs. of gold. This was much below expectations. The stone showed gold freely, but it was so intermixed with lead and other minerals, which neutralized the effects of the quicksilver, that consequently a good deal of gold was lost.

About fifteen men on an average were employed during the year in quartz-mining, and 150 ozs. of gold obtained.

Seventy-six miners' rights and three business licenses were issued.

LACHLAN DISTRICT—GRENFELL DIVISION.

(*E. G. Brodie, Mining Registrar.*)

IN transmitting my report of mining within the Grenfell division of the Lachlan District for the year 1880, I beg to state that, compared with the previous year, there has been a falling-off in the yield of gold, although the number of miners' rights issued show a considerable increase. The disparity in the number of rights issued and the number of men actually employed in mining is accounted for by the exodus from Grenfell to the new gold-field of Temora, where payable dirt was discovered in the early part of last year.

Alluvial mining in this division received a slight impetus in August last, in consequence of payable gold being discovered by Eager and party in a gully known as Payne's, about 2 miles west of Grenfell. A rush to a limited extent set in, and claims were pegged out for a considerable distance. It was well prospected by several parties for about ten weeks; but the lead, being narrow and patchy, only averaged a yield of about 3½ dwts., which was not payable.

In quartz-mining, the only claim that has anything worthy of record is the Enterprise lease, which has, as usual, rendered a very satisfactory account to the shareholders. The last crushing of 130 tons yielded over 300 ozs., or about £350 net per man for four months' work.

Mitchell and party, in the Homeward Bound Reef, are driving at the 191-foot level, to cut the third make of stone. If they succeed in doing so—and they are very sanguine about it—a new era in mining will undoubtedly commence here, as the second make of stone has not yet been taken out of several of the richest leases—notably the Welcome and the Lucknow; and as it has hitherto proved as rich as the first make; capital could be very profitably employed in prospecting—in fact, capital is the only thing required to cause a revival in this long-neglected gold-field.

During the year about twenty-four men were engaged permanently in alluvial mining in this division, and forty-two in quartz-mining. The yield of gold was:—From alluvium, 216 ozs. 3 dwts. 3 grs.; from quartz, 1,075 ozs. 18 dwts. 15 grs.; total, 1,292 ozs. 1 dwt. 18 grs.; value, £4,800.

LACHLAN DISTRICT—YOUNG DIVISION.

(*H. A. Smith, Mining Registrar.*)

I HAVE the honor to make my annual report for the year ending December 31st, 1880.

The number of miners' rights issued:—European, 328; Chinese, 27; total, 355; and 34 business licenses. The amount of gold bought by the Banks, 1,865 ozs., valued at about £7,000.

In conclusion, I may state that the excessive dry seasons militate against mining operations here, but when the water is available I have no doubt, from the report of practical miners, that I shall have the pleasure of making much more satisfactory report than of late has been my good fortune.

LACHLAN DISTRICT—TEMORA DIVISION.

(*H. Margules, Mining Registrar.*)

IN my report of 1879 I promised to be more explicit upon the various features of this division. To a certain degree I shall fulfil my promise, but not to the extent I desired to do, being hindered by illness, and as well as the unprecedented heat reigning here this season, an unbearable office, and other causes.

After all, I shall have to content myself simply to state facts as concisely as possible.

Geographical features.

In June, 1880, by proclamation the division was enlarged, including nearly the whole of the southern portion of the county Bland, under the designation of the Temora Gold-field, comprising an area of nearly 30 miles × 25 miles.

As already stated in my last year's report, the principal watersheds are the Bland or Yeo Yeo Creek, having its rise at junction with the Stockinbingal Creek, and falling into Lake Carval and the Narrahburrah Creek with a northerly course. Though these watersheds appear permanent as to drifts, in dry seasons they secure no adequate water supply. Other small creeks are in abundance, but none of them are useful for the retention of quantities to serve as a water supply in seasons of an ordinary summer's heat.

I shall therefore seriously recommend, in order to save the community here from dire sickness and even death, to have proper reservoirs formed, so that at the first good downpour of rain the waste waters may be saved and afford a permanent supply of water, which I am persuaded no other mode will accomplish.

The soil is naturally adapted for farming and pastoral pursuits as long as water can be procured. The discoveries which I shall have the honor to detail hereunder will speak for themselves how far the division may be styled highly auriferous. No other gold-field yet discovered in the Australias can (without water enough for drinking purposes even, or machinery to extract or separate the gold from the dirt or quartz) show the thousands of ounces by nuggets alone which have found their way into the Mint, into the Colony of Victoria, and elsewhere, this field having been properly opened only about six months altogether—namely, since July last.

There are no mountains—for miles the level of the district is scarcely varied. Miners by tests may discover where reefs and gullies lie; consequently new ground prospecting is no easy task here.

In July last I removed from Woodstown, and took my office up 10 miles west of that town, now known as Temora.

On my visit on the 13th May last I selected the site. Business men being very eager to obtain business sites, pegged them out and conditionally registered them at Woodstown; of course more followed in their wake, to such an extent that I was obliged to issue instructions for Mr. Surveyor Tozer, the then mining surveyor, on the 10th June, to survey off these lots. Four streets were then formed at once. Mr. Surveyor Schleicher was present on that day, and undertook to lay out the town and marked off six sections; but these were found inadequate, and six more sections were marked off at once. Since then the town has been enlarged to the extent of ¾ mile × ¾ mile; still the thirst for land is so great that a larger extension appears necessary.

The town lies about 1¾ mile south-easterly from the Walladilly Creek, under 34° 30′ south latitude and 147° 4′ east longitude, literally surrounded by alluvial leads and quartz reefs; in fact at present large portions have been taken up, and are worked by miners within its surveyed and improved boundaries.

Besides the surveyed town—where there are numerous hotels, numerous stores, and all sorts of trades and callings—the district also has, easterly, Upper Temora, with numerous stores, &c., and Lower Temora, rather an extensive village with post-office, police station, and lock-up. Most of it is erected upon Deutscher's free selection, where monthly rent has to be paid. Upper Temora is about ¾ mile distant, and Lower Temora 1¼ mile distant from the surveyed town, but are joined by a continuous chain of houses forming one street nearly 3 miles long, which was named by me—after the present Minister for Lands—Hoskins-street.

All Government buildings and offices, Telegraph Office included, are in the surveyed town.

I cannot close this section of my report without expressing regret that this district was not proclaimed a gold-field two years ago, on the recommendation of Mr. Patrick Murray; thus much heart-burning might have been saved as to disputes with the lessees of the run, and the blackmailing by Deutscher and other conditional purchasers. It is estimated that Deutscher has an income of over £60 a week by rents and tribute from claims.

Geological features.

I need hardly say, having had to attend to hundreds of people daily, that I could not possibly thoroughly examine the district. The formation here is palæozoic metamorphic or transmuted and tertiary.

As stated last year, my observations lead me to believe that the same description will apply to this which was given of the district of Parkes, Forbes, Grenfell, Adelong, &c., except that here exist more diorite, less pebbles, more sweepings of the rock, and less sands and gravels; of course this mostly refers to the Temora gold-field. Of the Gundabingal field I have already last year given an account. What appear to be gullies are very wide, and of great extent; they seem to fall into one another and unite, while quartz reefs are trenching them, hence the numerous outside feeders or side leads.

Alluvial Gold-mining.

Exhibition Lead, near Woodston.—The rain so much required did not visit this division to afford water for puddling until late in April last, when some of the dirt raised could undergo the puddling, but not all. Thus the principal claims on the Exhibition Lead realised about 1,250 ozs. altogether from 6,000 loads.

Since then some more washings took place—about 500 loads—and the amount of gold might be put down as a total of 1,300 ozs.

There are a few miners fossicking there yet. The population might be about fifty in number.

Malone's Gully.—Parties might have realised there altogether about 60 ozs. from 500 loads. At present it is totally deserted.

Opossum Power.—This gully must have contributed over 180 ozs. from 600 loads. Several parties are still engaged working the ground, and others prospecting, numbering about twenty men. Ultimately the gully is sure to turn out something good; it possesses promising indications.

Between Woodstown, Mimosa, Junee, Cootamundra, and Temora numerous parties of prospectors are out, and the registrations of prospecting areas are of daily occurrence.

Temora—Parker's Lead.—The history of this lead constitutes the history of the Temora gold-field. In November, 1879, Mr. H. Parker succeeded, under great difficulties, in forming a prospecting party, who set to work earnestly. Messrs. Parker, Way, and Murray seem to have been off and on on this portion of the district prospecting for several years previous to the year 1879, and unsuccessful; but Mr. Parker had an unalterable sort of prescience that the ground must ultimately turn out one of the richest in Australia, which he often imparted to me with great earnestness, and he could not rest until he proved his prediction. On the first of January, 1880, Messrs. Parker and Petrie informed me of having, at Woodstown, bottomed two shafts, depth 46 to 54 feet, and obtained wash in quantities, the gold being fine and scarcely paying, but the ground was still dipping. The statement was overheard, and a rush took place, but persons crowding in finding the prospects poor soon left with, but very few exceptions. Those who remained directed their attention to quartz-reefing until the 3rd February last, when Messrs. Parker, H. Thomas, Thos. Male, and Samuel Ross (displacing Petrie) reported to me payable gold, that is from 2 to 4 grs. to the dish from eight dishes, tried sinking to the depth 60 to 75 feet, wash from 12 to 18 inches, the bed pipeclay and soft sandstone. The sinking appeared dry, easy, and safe without timbering.

Unfortunately a telegram from the Braidwood office converted the 4 grs. into 4 ozs. The rush of miners here in consequence of the mistake was hasty, great excitement prevailed, and fanned into fury by interested parties who already knew the value of the place. Poor Parker was nearly lynched, and the red flag violently taken down and torn into shreds. Still the people continued to arrive in larger numbers—of course some would not be hoodwinked—and when Mr. Warden De Boos and myself arrived on the 13th February, at Temora, Messrs. Parker and party commenced a new shaft and were sanguine of success, and in no way disheartened or daunted. The shallow sinking was at once in full swing, and we inspected a fine specimen of about 1 oz. 16 dwts. which Moor obtained at 8 feet sinking. The population was then a few hundred. In February, Thompson and party had 2 tons of quartz crushed at

Barmedman's machine, with a result of 5 ozs. 3 dwts. to the 2 tons from the Hidden Star, about 400 yards easterly from Parker's lead. On the 10th May last, Messrs. Joseph Stimson and party washed two loads with a result of 4 ozs. 9 dwts., amongst which was a nugget of 3 ozs. from dirt taken at 54 feet depth, a few hundred yards south-easterly from Parker, which run afterwards turned into Parker's lead. The news consequently drew an additional population. The ground next Parker's northerly showed some gold at different depths, which must be regarded as hollows scooped out by action of storms, like the Golden Gate at 170 feet depth. General information spread very soon that the lead ran for miles and seemingly payable, but not proven, though it was rumoured that Murray and party, about 2 miles northerly from Parker's, near the free selection of Deutscher's, had gold in their shafts to warrant a report, but no water existed to puddle even a few loads. I had to caution prospectors not to hazard a report. About 1¼ mile from Parker's southerly Messrs. Tynan and party too were hard at work to prove their ground, but not until late in June did they obtain anything payable.

On the 13th May, Messrs. Maloney and party took up a prospecting area about ½ a mile north of Murray and party, and succeeded in tracing the gold, and on the 30th June reported gold in payable quantities, ascertained by dishes, stating that they were urged to report by the pressure of the population who clamoured for information.

Messrs. Murray and party reported, officially, on the 1st July, and Messrs. Tynan and party on the 5th July last, in consequence of the hasty action taken by Maloney and party giving report by the test of dirt by dishes instead of some loads by puddling or tomming. Though the lead bears different names at certain distances, it appears one continuous chain, links being replenished by golden reefs trenching the eastern side, so that many feeders are picked up, while in the lower portion two runs are followed, the eastern run being far the richest, while the bed on which the wash rests is found varied to a great extent. Messrs. Parker and party have pipeclay and soft sandstone, Messrs. Tynan and party soft slate, Messrs. Murray and party sandstone, and Messrs. Maloney and party called theirs granite, but very metamorphosed slate. Some thousands of people were then already located here, but after the stated reports the population must have increased within the short space of five weeks to very nearly 20,000; the thirst for claims, for allotments, for anything to secure a space, no matter how small, seemed literally insatiable, while gentlemen as well as ladies had to undergo (then in the very midst of a severe winter) considerable hardships. As to nourishment there was no choice—people had to take what they could procure. The finding of heavy nuggets fanned the already prevailing excitement into a glowing flame. During all this time rain fell very scantily, not even sufficient to create pools for prospecting; thus discouragement at last set in, decreasing the numbers considerably. Though no water but from slight rains could be secured, work has been prosecuted with all the vigour at the richer ground, and thousands of loads are to grass, while the poorer will be turned over as soon as general puddling shall have commenced. Some details follow hereunder.

Surfacing and shallow sinking.

On the eastern portion, between M'Pherson's reef and Parker's prospecting claim, the surfacing and shallow sinking have been prosecuted. The depth of wash was then from 3 to 12 feet. Some fine specimens came from this portion of the field; 1½ lb. yielded in one instance 8 ozs. On the 19th instant a nugget weighing 1 oz. was picked up there. The most of the ground is now in the course of being re-worked. The most noteworthy claims there were the brothers Cormack and Roberts, Foster, Matthew, and Bloomfield, which afforded good returns when tried. The first gold from this lead was brought direct to the Sydney Mint, especially from Cormack and Roberts, in the amount of 67 ozs.

There are about 4,000 loads to grass, with a supposed yield from 3 dwts. to 15 dwts.

The East Heading.

Some few yards below the shallow flat above described the east fork of the heading of the lead virtually commences with the claims of Bland and party, the depth being about 54 feet and 65 feet at Matson's and party, with a general width of 38 feet, and wash 2 to 4 feet. Some trial washing of the eleven claims there have various results from a few dwts. to 2 ozs. to the load. The stuff to grass estimated at 4,260 loads, and the yield will average from 3 dwts. to 2 ozs. to the load.

The South Heading or Stimson's.

This branch of the heading seems to take its rise above and more southerly from the shallow ground, and has been opened, as already remarked, by Stimson, on the 10th May, 1880, with a fine yield of over 2 ozs. to the load, and some really pure nuggets. The fork commences with two claims above Mr. Joseph Stimpson's. The sinking here is from 48 feet to 65 feet, the yield will likely be from 6 dwts. to 2 ozs. to the load; the width of the lead nearly 40 feet, with wash 2 to 3 feet. The dirt to grass in the nine claims is about 3,510 loads.

Parker's Lead proper.

The above two forks junction seemingly at Parker's prospecting claim.

The sinking in this claim is as follows :—

	Feet.
Surface soil	3
Stiff clay	7
White clay spotted red, nicknamed "Native Cat"	40
White clay with clinkers	10
Yellow clay	10
Chocolate clay, with quartz...	6
Wash	4
Total...	80

The report of the party on the 3rd February stated sinking from 60 feet to 75 feet. It will be thus seen the ground was still dipping,—the bedrock with payable gold lying deeper than first ascertained. As already stated, this claim gave a stimulus to the miner, and indicated the value to this field. Messrs. Parker and party since November 1879 sank several shafts, and drove altogether about 400 feet, being now in the course of sinking another shaft. That party has done an immense amount of work. The lead seems there 70 feet wide, with wash about 4 feet. They have to grass about 600 loads; two loads washed gave 3 ozs. 4 dwts.

I spoke of hollows met with in the lead; an instance occurs in the claim next and north to Commins and party (called Golden Gate), which has a depth of 120 feet. This depth extends to the right and left, and about 2 chains northerly. The Golden Gate had about 60 ozs. in nuggets. The wash is about from 6 to 15 feet deep, and 284 loads yielded 16 dwts. to the load.

It must be understood that this lead is held on the block system, and oftentimes four claims abreast.

Over twenty-five claims are at present at work on this lead.

There is ground outside the lead that as soon as water comes will be worked profitably.

The lead seems to be 70 feet wide; wash from 2 to 4 feet deep, except in the hollow mentioned. There are about 11,518 loads to grass. Several nuggets were unearthed in this portion of the field. The average yield is estimated from 5 dwts. to 2 ozs.

Tynan's Lead.

About ¾ of a mile from Parker's claim, Tynan and party's prospecting claim is situated. The report of the 5th July last made by this party states the depth to be 70 feet, easy sinking, and containing an ironstone sand drift of about 20 feet. The bed is soft slate, and the wash 2 feet deep. Since then the lead proved there almost the widest (about 150 feet), and the wash about 4 feet.

Over thirty claims are at work here, and have produced already about 9,905 loads, with a supposed average yield of from 5 dwts. to 1 oz. to the load.

Mearns or Murray's Lead.

The claim giving the lead the name is one of the most prominent in the district, affording through its proved intrinsic value the actual importance to the district, and showing by its distance—nearly 2 miles from Parker's—that the lead so far is of great extent. Messrs Murray and party took up the ground on the boundary of Deutscher's conditional purchase on the 19th February last, sunk five shafts, obtained gold in three shafts, but payable gold in two shafts only.

The lead in this claim appears 60 feet wide, the sinking easy, wash from 6 to 7 feet.

The different layers are—

	Feet.
Surface soil	5
Red heavy loam	5
Dark ,, ,,	14
Various layers of drifts	13
Basaltic clay with clinkers	33
Wash	6
Total	76

Messrs Patrick Murray, Patrick O'Donnell, John Mearns, William Ley, David Lindsay, and Andrew Mahoney, are the original party who discovered and reported gold on the 1st July last. This discovery gives evidence of permanence of the field.

The party has raised already 1,100 to 1,200 loads. The prospects at present obtained are from colours to 1 oz. to the dish.

From Deutscher's ground, of which this claim is a portion, the nest of nuggets commences. The most fortunate finders are Bourke and party, Lewis and party, Forster and party.

There are about thirty claims, which have already raised 9,435 loads.

Two distinct runs seem to traverse the ground all along, the easterly being the richest—in fact giving very rich prospects.

Maloney's Lead.

This is a continuation still of the main lead about half a mile north of Murray and party's. Messrs. Maloney and party reported gold on the 30th June last at a depth of 86 feet. The party took up the claim on the 3rd May last, and in striking gold confirmed the value of the lead and district. The width of the lead is 80 feet here, but after leaving the Prospectors it turns, varies, widens and narrows, and the two runs mentioned in Murray's continue here too with the same result.

The different layers met with in sinking a shaft are—

	Feet.
Surface soil	8
Gravel	5
Clay, red and white	12
Clay with clinkers	40
Chocolate-colour clay	20
Wash	1½
Total	86½

The sinking is very easy; six men may bottom a shaft within four days. The bed appears mullocky pipeclay and slate. About 14 chains due north are Keating and party's claim, which has yielded 1,200 ozs. in nuggets; Nugent and party, 500 ozs. in nuggets; and Buckley and party, 660 ozs. in nuggets already unearthed; here also very rich dirt is obtained. These claims seem to lie in a basin.

Thirty-six claims here have produced already 6,010 loads; estimated yield, 10 dwts. to the load.

The Frenchman's Lead.

Still a continuation of the same lead northerly, with a depth of 90 feet. The dirt to grass, about 300 loads from very few claims.

Below the Frenchman's.

Over 300 men are here tracing the lead and prosecuting the search for gold; some of these parties have passed the Wolladilly Creek. In a few instances is dirt raised. There might be there about 2,000 loads to grass altogether.

Before closing this portion of my report I am induced to point out the nature of the dirt here, by custom called "wash." Neither the dirt or the gold mixed with it shows the slightest action of water. The dirt looks so much like solid rock that even experienced miners mostly took it for the bottom, and having taken the upper empty portion to try, abandoned as worthless some of the best claims.

By the courtesy of J. O. Atchison, Esq., Manager, local branch of the Bank of New South Wales, I am enabled to afford a list of nuggets obtained between Murray's and Buckley's claims, in weight 28 ozs., 40 ozs., 68 ozs., 76 ozs., 99 ozs., 16 ozs., 14 ozs., and 24 ozs. ; also, by the courtesy of J. A. P. Selkirk Esq., Manager of the local branch of the A. J. S. Bank, I am able to state that further nuggets were produced, in weight 59, 63, 72, and 84 ozs.

SUMMARY of the supposed quantity of dirt now to grass, and the estimated yield.

Name of Leads.	Number of Loads.	Depth of Washdirt.	Probable Yield.	Total.	
		Feet.	dwts.	ozs.	dwts.
Surfacing and shallow sinking	4,000	15	6	1,200	0
East Heading	3,435	52 to 65	6	1,031	0
South Heading	3,510	48 ,, 65	6	1,053	0
Parker's	11,518	70 ,, 120	10	5,759	0
Tynan's	9,905	70 ,, 75	10	4,717	10
Murray's or Mearn's	9,435	76 ,, 83	20	9,435	0
Maloney's	6,010	86 ,, 90	20	6,010	0
Frenchman's	300	90	7	105	0
Below the Frenchman's	2,000	100	7	700	0
Total	50,113	....	....	30,010	10

The amount of gold, 30,010 ozs. 10 dwts. at £3 17s. per oz., will give the handsome amount of £108,037 16s.

Deep Lead.

About 2 miles north-east from the town of Temora.

An area for prospecting was taken up by Craig and party on the 6th July last, and they struck gold on the 12th November, and reported on the 20th November payable gold to me.

Altogether the party sunk eight shafts, and drove 225 feet; payable dirt was obtained at 152 feet. The sinking is as follows :—

	Feet.
Surface soil	10
Bluish and red clay	10
White clay with red streaks and clinkers	25
Red and white spotted clay	50
White clay	10
Pink streaky clay	25
Ironstone reef	5
Yellow clay	5
Waste	10
Pipeclay	2
	152

The width of the lead seems so far 15 to 20 feet. The wash seems finer and more gritty than at Parker's Lead.

They puddled 104 loads, and obtained altogether, with nuggets picked out while raising dirt, 26 ozs. 3 dwts. The nuggets weighed 10 ozs. and 4 ozs., besides smaller ones.

The lead seems to lie under the eastern reef, which apparently has been scooped out by the heavy play of water upon it. There are certainly no such things as walls, as stated in newspaper reports.

Mr. Craig, like Parker and party, was nearly lynched after his report of gold on the 23rd November last, by a mob. The red flag had been taken down by the mob, but as soon as I heard it I ordered it to be hoisted, and told the Messrs. Craig and party that, since they reported gold, they must abide by the Mining Board Regulations, otherwise they would lose their right to a prospecting claim. They complied accordingly.

About fifty claims are taken up. Some are of the proper depth, but the ground is very difficult to prove, through the extreme depth and the heavy drift existing therein.

No. 1 South struck water at 170 feet depth, but little gold.

In No. 1 North the party came upon an overhanging plastic slate reef, which they took for basalt. In sinking no slabbing is required.

Captain Matthews formed a Company in No. 4 North to pump the water for puddling purposes. Messrs. Cavan and party inform me that in their claim No. 8, north of Craig, they met in sinking the following layers:—

	Feet.
Surface marl soil	1½
Grey clay, with veins of sand	28½
Deep red clay with quartz and ironstone	30
Yellow and black clay, with black gravel in streaks	30
Very black gravel, large proportion ironstone and quartz	35
Black clay	10
Total	135

The bed-rock appears to be metamorphic rock—a sandstone and diorite. The diorite belt runs across the lead just at their shaft, about 300 yards wide, easterly and westerly environed by slate. The lead employs about 120 men.

More alluvial ground has been worked, but not being regarded as payable I shall not include it in this report.

Dirt puddled at machines (Smith's and Cook's) at Woodstown, Parker's and Lewis's at Temora.

Leads.		Loads.	Depths.	Yield.	Total.		
			Feet.		ozs.	dwts.	grs.
Exhibition	Woodstown	6,500	70 to 83	4	1,300	0	0
Maloney's Gully		500	46 ,, 75	2½	60	0	0
Opossum Power		600	30 ,, 170	6	180	0	0
Surfacing &c.	Temora	330	0 ,, 15	6	99	0	0
Parker's &c.		2,207	72 ,, 120	10	1,103	10	0
Deep Lead		104	0 ,, 152	5	26	0	0
Total		10,241	...	...	2,765	10	0

	Loads.	Ozs.
Messrs. Roberts and party tommed	125	65
Do. do.	200	100
Do. Foster and party	96	32
Several other parties tommed and cradled at Hodson and Matthew's dams	800	200
By cradling and tomming and troughing at different dams and water-holes	10,000	3,000
By nuggets obtained	...	3,000
Total		9,162 10 dwts.

The above tables show the gold already realized or to be realized at the alluvial leads at present open.

Mining upon Quartz Reefs.

In my report of last year I pointed out that this branch of mining had been prosecuted in this district with little or no success for more than sixteen years already, and but for Messrs. Peterson, Thompson, and party's crushing in February last, 5 ozs. 3 dwts. to the 2 tons at the Barmedman machine, quartz-reef mining would scarcely have revived here again, in spite of the great rush of people in May, June, and July last. Though Thompson's party was isolated, still it drew, by its heavy yield, the surplus population to look for reefs which are in abundance here.

Lately especially the public have been astonished with the stone produced at Bourke's alluvial claim, about three claims north of Murray's, in the so-called squatter's ground, being otherwise renowned for richness of dirt and nuggets. The dirt there rests upon a very rich reef, like the Bushman's lead upon the Dundee Reef at Parkes; also Bourke's celebrated quartz lease, which was refused, a portion of which area has been re-occupied by Bourke and party as an ordinary claim, shows now very rich stone. How far either of these two reefs will sustain their present character is hard to foretell, as there is very little work done there or on any of the reefs in this district. Then comes

Wilson's Hill.

The Amelia Company, with a shaft of 90 feet, walls diorite and greenstone, has 30 tons to grass. The Company secured a dam, water-right, and machine site, and, if well supported, ought to pay good dividends. The McPherson's Reef runs through the Company's ground, beside the Mary Reef.

There are several claims adjoining the Company's claim, all trying to test their holdings.

The comes the Flagstaff Hill Reef, taken up by Pollock and party very recently.

On Wilson's Hill is also Hodson's Extended, one of the most valuable quartz-mining properties here, but I am afraid it is too much neglected.

More southerly is the Cunningham Reef. The parties holding claims are trenching.

Then follows again O'Donnell's Reef, which is being prospected.

North of McPherson's Reef is the Hidden Star extended claim, upon Mary Reef, held by Thompson and party, who, as above stated, tested their holding by a crushing, and obtained 5 ozs. 3 dwts. to 2 tons. The walls are slate and diorite; the underlie is westerly; stone to grass, about 60 tons. This is a very valuable property.

About 1½ mile south-east from McPherson's is situated Rich's Reef, showing splendid stone. Several shares have changed hands at a very high figure. The claims north and south show very well too, and work is prosecuted there more vigorously than at the other reefs. There are numerous other reefs taken up and occupied near Rich's Reef.

Upon McPherson's and other hills many claims have been taken up and reefs traced; the most important are Warnock's, the Missing Link, the Black Prince, Fitzpatrick's, and Bryan's.

The success of quartz reef mining here, as elsewhere, I need hardly say, depends upon good machinery being brought upon the field and a supply of water being obtained.

The Hibernian Reef, about 10 miles westerly, seems to attract the attention of speculators.

The prospectors are about 85 feet deep, and have about 18 tons to grass; the lode is 3 feet wide, walls are slate, and the underlie westerly. Some 40 lbs. stone tried at Melbourne brought 9 ozs. 13 dwts. to the ton.

Preston and party in No. 1 South have done immense work in the short time of their occupation. The party are over 100 feet down with their shaft—all looks very promising.

Other parties are in possession of claims there too, but it is premature to offer an opinion upon them.

The Sebastopol Reefs are drawing attention again, and lately have been taken up, and are valued as much as they were sixteen years ago.

At Opossum Power the reef has been re-occupied.

Reefing, without doubt, will in the future prove in this district the most important branch of gold-mining. Of course gold-saving machinery is required, otherwise the value of the reefs will not be fairly tested.

General remarks.

The gold workings are undoubtedly very scattered throughout the district, which, as shown in the early portion of this report, is very large, while business people, mechanics, tradesmen, and even professional men have crowded in in every direction where they could only secure some vacant spot or room, hence the population cannot be less than 10,000 souls within the boundaries of the division.

Hundreds of prospecting parties are out, but the time being too limited since the opening of this field and the drought so severe, I am unable at present to record the fruits of the labour of these numerous prospectors. The gold produced appears as follows :—

	ozs.	dwts.
By alluvial workings	9,162	10
„ quartz „ (Thompson's)	5	3
Total	9,167	13

In value at £3 17s. per oz.—£32,503 14s.

The gold was divided as follows :—

	ozs.	dwts.	grs.
By the Bank of New South Wales	3,153	11	4
„ Australian Joint Stock Bank	2,161	17	9
Banks at Cootamundra and Young, and storekeepers at Young	1,540	0	0
During holidays by miners carried to the Colony of Victoria	1,312	4	0
Nuggets bought by private parties	1,000	0	0
	9,167	11	13

The Gold Escort was established not earlier than in October last, hence only the following quantities were brought down to Sydney by it :—

	ozs.	dwts.	grs.
October, 1880	801	16	16
November, 1880	503	16	17
December, 1880	1,378	2	6
January, 1881 (product of December)	1,176	0	4
	3,859	15	19

By the so often repeated statements that no water existed for puddling, it will be apparent that the whole product is not represented by the actual gold extracted—

	£	s.	d.
Valued at	32,503	14	0
(But also the dirt to grass.)			
The result of labour 1880 proper	108,037	16	0
And value of quartz raised	500	0	0
Total	£141,041	10	0

Should that amount be divided by the number 5,000, which number is supposed to represent the working classes of the district, either employed, idle, or working unprofitably, including carters, puddlers, &c., during the last six months, it will show an annual wage of over £56 per man. No field yet has ever produced an equal result.

Besides the great numbers of miners' rights and business licenses issued throughout the Colony and used here, I have issued for the year 1880—miners' rights, 4,216; and business licenses, 428. For 1881, up to the 27th January instant—miners' rights, 1,503; and business licenses, 36.

In submitting the collection of statistics, I have the honor to state that their accuracy chiefly is due to the untiring exertions of the Warden's Bailiff, Mr. James Davoran.

Messrs. Roberts and Cormack Bros. have submitted to me two Mint receipts, one dated 15th March, 1880, for 35 ozs. 57·100, and the second dated 13th May, 1880; for 31 ozs. 37·100, numbered respectively 91,311 and 91,827, in order to bear out the previous statements that payable gold existed in the district long before the month of May, and to show in what quantities the gold was produced. Parker and party drew on the population, amongst whom were far-seeing men, who at once set to work and made fortunes for themselves, while the bulk of arrivals in February only enjoyed a very unprofitable journey—a very short visit to the scrub of Temora.

By a careful investigation it appears, that ninety-seven claims are ooked upon as payable on the leads, known as Parker's, Tynan's, Murray's, and Maloney's, or on the same line of the run of gold, and may be classed as follows :—

25 claims with an estimated yield from 1 oz. to 5 ozs. to the load
35 do. from ½ oz. to 1 oz. per load.
37 do. do. 4 dwts. to 8 dwts. per load.

SOUTHERN DISTRICT—ARALUEN DIVISION.

(*Mr. Warden Aldcorn, P.M., Araluen.*)

THE annual report required to be furnished to the Department of Mines by Wardens must, so far as the gold-fields under my charge are concerned, be merely a formal one ; because I have only held the office of Warden for about the two last months of the past year at Araluen, Major's Creek, Little River, Jembaicumbene, Bell's Creek, and Upper Shoalhaven, in the Southern District.

So far as I am aware, there is nothing new or special to report for the year 1880, and no doubt the Registrars will furnish the information as to details in the workings at their respective divisions.

I may just state that from returns kindly furnished to me by the Banks, as to the quantities of gold purchased by them, there is a marked increase in the *total* quantity, as compared with the previous year—and, as will be seen by the subjoined statement, there has been an increase on all the fields. This result must be regarded as very satisfactory, because the greater part of the year has been dry and unfavourable for the workings at Little River and Major's Creek—in fact unfavourable for all the mining operations of this part of the Southern District, except the stripping claims in Araluen.

It is to be regretted that the efforts made at Major's Creek by some gentlemen of means and experience from Victoria, to effectively work and treat the reefs at that place have not as yet proved successful, although a considerable expenditure has been incurred for machinery, &c. Operations have for the present been suspended ; but it is more than probable that renewed efforts will soon be made to overcome the difficulties, hitherto insurmountable, in separating the gold from other metals, which so much abound in the stone.

At Little River also it is probable that during this year an attempt will be made, with sufficient capital and proper machinery, to work some of the reefs which are expected, when efficiently worked, to turn out very payable.

The following is the statement before referred to :—

Place.	1879.			1880.			Increase.		
	ozs.	dwts.	grs.	ozs.	dwts.	grs.	ozs.	dwts.	grs.
Jembaicumbene and Bell's Creek	606	14	11	715	5	3	108	10	16
Araluen	4,224	2	7	6,332	14	10	2,108	12	3
Major's Creek	2,623	18	23	2,662	19	19	39	0	20
Little River	1,867	12	15	2,863	1	7	995	8	16
Shoalhaven River	467	4	19	912	12	13	445	7	18
Totals	9,789	13	3	13,486	13	4	3,697	0	1

SOUTHERN DISTRICT—MORUYA DIVISION.

(*Mr. Warden Keightley, P.M., Moruya.*)

I HAVE the honor to furnish the following report on this portion of the South-western Gold-fields under my charge.

The information will only apply from the 1st October to the close of the past year, being the tenure of my office as Warden.

In the early part of September some important discoveries were effected by a prospecting party consisting of the Messrs. Williams, Hollingdale, & Co., on the south-east side of the Dromedary Mountain, and immediately on the sea-coast.

These discoveries, which are singular in their nature, inasmuch as there is not a parallel case in this Colony, consist of rich deposits of free gold which has been subject to the action of the sea; reducing it to a waterworn condition, but evidently washed back by the sea, and ranged in two terraces, above the high-water level.

As is well known, the richness of the deposit attracted a rush of between two and three thousand miners, and, as is usual in such cases, and especially in such a new feature in mineral deposit, apart from those actually on gold, the place was pretty generally condemned as a patch, and no more, and then abandoned; but in the short time that has been allowed for trial, experience has shown that ground considered valueless is now being proved highly auriferous, and the run has been traced to the west, through the terraces, and is now being pursued under Lake Wallaga.

I have devoted especial attention as to the source of this rich deposit, as to whether it is a continuation of the once celebrated Gulf gold-field, the traces of which were lost, or whether its richness was derived from the Dromedary Mountain, which is distant some 4 miles to the north-west; but up to the present date there is no certain clue, any further than that occasional portions of matrix gold are being discovered, with adhesive quartz, and of a coarser description, which advances the idea that reefs are the parents of the stream.

There are now over thirty claims on payable gold, some half-dozen exceedingly rich, producing from several dwts. to over 3 lbs. of clean gold to the dish. The gold on the coast, especially where it is so rich, is the wash from the hills, which are highly auriferous, and where it falls into the sea has been subject to the action of the waves and cast back. It is found close to the bed-rock, which is a formation of devonian slate with a pipe-clay crust, and is contained in a heavy deposit of black sand, and appears to be devoid of pyrites, arsenic, or any spurious metal. The gold is contained in the black sand, and is for the most part very evenly dispersed, although the gravity of the sand is such as to materially interfere with its separation from the gold. On a recent visit I had eight ordinary buckets tested, taken off the bed-rock, which gave the handsome yield of 7 lbs. 7 ozs., and I find on reliable authority, that since washing has commenced, which has been with imperfect appliances, the rough yield has exceeded 2,000 ozs.

I have had a township surveyed and laid out, on which there are the usual amount of buildings and business holdings, suitable for a population of between 400 and 500 people, and the place is prospering daily.

Two reefs have been discovered; one, Scanlan's at a distance of 4 miles; the other, Ferguson's, at a distance of 10 miles from the township. The former appears to hold good, as there are some applications for leases in that vicinity at a place called Corunna, on the coast. 14 miles to the north a similar class of deposit of black sand and gold has been discovered, though not so rich or extensive; and again on the coast at Wagonga, close to the heads, further north of Corunna.

Again, turning to the south of Montreal, gold is being found at a place called Nelson, of a payable nature but of a coarser description.

Several pumping appliances have been erected, with various grades of horse-power, on the banks of Wallaga Lake; and as the lake, which is some 60 miles in circumference, is an inlet from the sea, it may be considered as almost the first instance where pure salt water has been successfully applied for the extraction of gold.

There are few if any places in this Colony where mining is a pursuit, that dame Nature has been so bountiful and lavish in her gifts, not only in scenery, but in surrounding advantages.

Montreal gold-field, apart from possessing a magnificent climate, an extraordinary rich deposit of gold, with as yet its untraced source or lead, is surrounded with abundance of lakes, alternately fresh and salt, abounding with fish and game, and easy communication both by sea and land.

There is a large area of land improved and unworked between Montreal *viâ* Dignam's Creek, in a straight line with the Nerrigundah or Gulf gold-field, containing strong indications of mineral wealth; and should this lead be traced successfully in that direction, it will afford ample area for the employment of many thousand miners, with an abundant water supply.

Again, within 4 miles of Montreal is the celebrated Dromedary Mountain, which in places is still being worked in a primitive manner, by a few who are half miners and half farmers, but wanting in that practical knowledge and scientific acquirement that is required to develop its hidden resources.

I can only say, as an old Commissioner of over a quarter of a century's experience, that I consider the Dromedary is one of the grandest deposits of geological information and undeveloped richness that exists in the Colony, and is evidently the nest-egg that supplies the continous stream of precious metal that flows to its base.

Since penning the earlier portion of my report, I have had occasion to visit Montreal, and found the lead from the back of the Prospectors claim running west and into the Wallaga Lake.

A shaft has been sunk some 150 feet out in the lake, put down with water-tight boxes, sinking about 28 feet. This shaft has so far bottomed on payable gold, but of a coarser description than obtained at the Prospectors.

The reef at Ferguson has also been opened to a depth of some 40 feet, with a payable indication of gold.

A sad gloom was cast over the community and the mining interest generally by the melancholy fate of Mr. Geological Surveyor Lamont Young, whose services in a scientific point of view would have been of material value to all interested in geological investigations; and I trust at some early date this locality will be afforded the experience of some highly trained geologist, in order that science may throw a clearer and more explanatory light on various features in mineral strata at present unexplained.

SOUTHERN DISTRICT—NOWRA DIVISION.

(*Mr. Warden W. Lovegrove, Nowra.*)

REPORT of the Warden of the Nowra sub-division of the Southern Gold-fields, on mining for the year 1880.

The Yalwal gold-field is situated on the Danjera Creek, about four hours' ride to the westward of the agricultural plains of Shoalhaven. The navigation of the Shoalhaven River extends to within 8 miles of the mines, and goods are packed from Burrier to the miners. Machinery is brought in by a circuitous route, at the rate of £3 10s. a ton, from the sea-steamer. No alluvial work is understood or attempted in the vicinity. The claims on which work is done extend about a mile N. and S. by 20 chains E. and W., and are all quartz leases. The northernmost were the earliest prospected, but very insufficiently, as the projecting cap of the reef or detached boulders of quartz were tried at a very high elevation above the water, and no tunnel was put into the hill coming south to the Eclipse. This fine claim works continuously but very slowly, the total output this year being only 406 tons, which have averaged nearly an ounce and a half of gold to the ton, part of it going 4½ ozs. to the ton.

The Pinnacle, which follows the Eclipse, has, without any regular system, turned out plenty of gold from time to time, and during this year has crushed 218 tons, at an average of an ounce and a half to the ton. This stone was got out through the Eclipse tunnel on terms. Alongside of this is a lease not yet issued, on which is a tunnel of 60 feet driven and left, and a shaft of 25 feet which is being sunk on payable stone, as the owners think.

We now cross the creek, which is running at this point from S.W. to N.E., and come on to a 10-acre block which has been forfeited and retaken during the present year. Then we reach the Colombo, which has a shaft of 60 feet and drives of similar length, but has taken out no stone as yet for crushing. Next to it is the Pioneer, which alone claims to have a defined reef, and is working between perpendicular walls about 6 feet apart. They take out larger bodies of stone than the other leases for less money, and have made 19 dwts. 18¾grs. as their average for 563 tons.

The Homeward Bound put its owners in such good funds last year that they have only cared to crush 80 tons this year, for an average of 1 oz. 1 dwt. per ton; but they have started a tunnel to cut the hill from east to west, and have driven it 210 feet; they have also sunk a shaft 70 feet in which they cut two flat leaders carrying gold, and from the foot of this shaft they are driving to meet the tunnel. These workings are the highest on the hill, and cannot be much short of 400 feet above water-level.

The last lease at work is the Star Company, who are not so elevated in their ideas as their neighbours. They are boring into the hill from the westward, but they are only 35 feet above the water. The tunnel has been driven about 160 feet, and is wet and unpleasant to work in.

The line from north to south being completed, it only remains to notice a line lying along the east boundary of the above leases.

Abreast then of the Homeward Bound is the Last Chance, which I believe to be a good claim. They have only worked it in a very small way, and the crushings are very payable. East of this is Keiller's, lately refused on a technical point. They crushed this year 16 tons for 12 ozs. as I hear. Still going north we come to the Golden Crown, which has a shaft and drive, and turns out small crushings which average 11 dwts.

A curious point in this gold-field is the apparent regularity of the strata at certain points, and the non-existence of defined reefs for any distance. You find a headwall and there is no footwall, or a footwall and there is no headwall. The Pioneer supposes itself to have a regular reef, but this is denied by others. I trust the Government will be able to have this reported on during the ensuing year, more especially as the prospecting is confined to so small an area, whilst the quartz country is of very wide range, and the conditions of expense, accessibility, &c., are so favourable. The machinery is quite in excess of the work done. The Eclipse battery is idle half the time, and the Pinnacle are just completing a splendid plant of 15 heavy stamps which will require very different management to keep it going. In anticipation of this, they have arranged a very convenient tramway, level with the wall-plates of their battery-shed, and curving round the face of the cliff for 280 feet to the mouth of a proposed tunnel, in which no blow has been struck as yet. Meanwhile they are negotiating for the passage of more stone through the Eclipse tunnel.

No other mineral has been worked during the year. A bore is being put down at Jervis Bay for coal, and is reported to be nearly 400 feet down, but great mystery is observed respecting it, and I do not anticipate a successful issue to the project; meanwhile the splendid seams which do exist in this district are entirely neglected.

SOUTHERN DISTRICT—BRAIDWOOD DIVISION.

(*W. F. Robertson, Mining Registrar.*)

It is a source of gratification that the anticipated improvement, consequent upon the lately increased rainfall giving a more adequate water supply, referred to in my report for the year 1879, has been fully realized in the past year by a much increased activity in the various mining operations of the Braidwood division, which has had its reward in a correspondingly large increase in the yield of the precious metal from these gold-fields. So much has this been the case that, as is disclosed by my returns in tabular form accompanying this report, the yield of gold has been almost doubled, having been increased from 860 ozs., of the value of about £3,200, in 1879, to 1,512 ozs. of the value of nearly £6,000, in 1880. And not alone has that increased activity been so very apparent in gold-mining; it has been equally noticeable with respect to mining for metals and minerals other than gold. For instance, several applications have been made to me during the year for lease of lands, under the provisions of the Mineral Lease Regulations, in the vicinity of the Jacqua and Spring Creeks, and also at Fairy Meadow, near Bungendore. Those near Jacqua and Spring Creeks were taken up in the latter part of the year, and the lessees are, I believe, erecting the necessary machinery to work them. At Fairy Meadow, Mr. Brady, the lessee, reports that he has been some thirteen months employed trying the ground, and that during that time he has found a lode, which being assayed yielded over 70 per centum of a valuable peroxide of manganese, which is said to be the only first-class quality of that mineral met with in the Colony; and close to that lode there runs another deposit or lode which is supposed to be mercurial ore, and the finest gossan of which is visible for a distance of 300 yards (of the width of 21 yards) in an east and west direction. Mr. Brady appears very sanguine as to the ultimately great value of this discovery, as he asserts that the peculiar qualities of the mineral and resources of the mine have not yet been developed to any considerable degree. There is a third lode which he has sunk along for a distance of about 13 yards; it is 2 yards in width, and runs in the same direction as the others, namely east and west, and is so very hard that it has to be blasted; this is supposed to be copper, and several specimens from it have been forwarded to the Department of Mines. One of those specimens attracted much attention at the International Exhibition last year in Sydney.

Several unsuccessful searches have been made for silver in the ranges to the westward of Braidwood and the Shoalhaven River, but the feeling is as strong if not stronger than ever it was, that silver will be found there at some future time not very far distant.

Under the Gold-mining Lease Regulations applications for lease of areas of land varying from 3 acres to 25 acres have been made during the year. These are situated at New-come-up, Spring Creek, Jacqua Creek, Still Creek, and near Short Creek, on the Shoalhaven River Gold-field.

Under the Mining Board Regulations numerous registrations of mining tenements have been made in the shape of claims of different kinds, races, dams, and other water rights and tunnels on the Shoalhaven River Gold-field, at the junction of Jembaicumbene Creek, at Bombay, Columbo, Warri, Pipeclay, Back Springs, Limekiln Creek, Spring Creek, Long Gully, Jacqua Creek, and New-come-up, and on the Jembaicumbene Gold-field at Miller's Crossing, the Chinese Camps, Daly's Crossing, and other places, all of which several tenements have been worked with a very marked degree of success, giving ample remuneration to the miners for the labour bestowed upon them, and also forming most valuable additions to the many such workings on those gold-fields.

SOUTHERN DISTRICT—ARALUEN DIVISION.

(*E. F. Carlile, Mining Registrar.*)

Alluvial.—My report for 1879 stated that "the general report from all the claims is that the shareholders are sanguine of success." It is gratifying now to be able to say that the hope or anticipation then expressed has been fully realized, as witnessed by the amount of gold won during the year just closed, which is more than 2,000 ounces in excess of that for the previous year, viz., for 1880, 6,613 ounces, valued at £24,970 (being 6,460 ounces from alluvium and 153 ounces from quartz), as against 4,526 ounces, of the value of £17,000, for 1879. This increase is accounted for by a general improvement in the yield (in a great measure owing to the weather having been favourable for mining in this division), and not to any exceptionally large finds, although some of the more extensive claims have occasionally had good washings.

The claims spoken of in my last report as being engaged in re-opening after having been filled in by floods are now in good working order and employ a large number of men; the owners of one of them have completed a covered tail-race to their work, at a cost of £1,500, and have thus done away with steam-power for drainage purposes; this is the fourth race of the kind now in use here.

Another party has adopted the method employed by some others of hauling the wash-dirt to the surface by means of steam-engine and trucks, which is found to be a more expeditious and economical plan than working with horses and carts. An effort is being made to form a Company to work a large tract of ground which it is thought would pay if drained by gravitation; the race would cost from £1,500 to £2,000—a serious item to start with.

Quartz.—Only a little quartz-mining has been done during the year, and that at Bell's Creek; the result, I am informed, was satisfactory, being 12 dwts. 8 grs. per ton; the sinking was in soft granite to a depth of 70 feet.

A reef in Araluen from which payable crushings have been obtained is now idle, as the last working developed foreign or base metals which sickened the quicksilver and caused the gold to be lost; with an improved method of treating the quartz, the holders are confident that it would again prove payable, as some of the returns were 6 ounces to the ton.

Silver and Copper.—One or more blocks of land have been taken up for mining for these metals; work has not yet fairly commenced, but the parties are well satisfied with the assay returns of some parcels.

Returns from claims.—I enclose two returns from individual claims, giving the mode of working and the result. There continues a great disinclination to furnish particulars as to the amount of gold obtained.

SOUTHERN DISTRICT—MAJOR'S CREEK DIVISION.

(*John Heazlett, Mining Registrar.*)

ALTHOUGH the year 1880 has shown no signs of improvement in the shape of new finds of gold or other minerals within my division, the old workings have held out remarkably well, as by comparing the quantity of gold won with that of the year 1879, the decrease, if such it can be termed, is very trifling, viz., about 52 ozs., which may be attributed to two or more causes.

Firstly.—I have reason to know that more gold by 50 ozs. was disposed of at Braidwood and Sydney than was the case in 1879.

Secondly.—There is a considerable quantity of mundic at the Spring Creek Company's mine awaiting treatment, and about 20 tons pyrites from the Big Hill Mine gone to Victoria to be treated there, also about 9 tons pyrites at the Red Hill Company's Works yet untreated. Had these three parcels been treated within the year in which they were produced, it is probable there would have been a few hundred ounces more gold.

Thirdly.—The year 1880 has not been favourable to those miners depending on storm-water to work their claims. In the month of February we had sufficient rain for all purposes except flooding off or ground sluicing on a large scale, but the water cleared off too soon to be of immediate benefit, and not until the month of September was there a sufficient supply to enable the miners to clean up their ground sluices, so that with a few exceptions there has been only one sluicing up during the whole year.

During the year 1880 I sold ninety-four miners' rights, showing an increase of nine on the year 1879, and of twenty on the year 1878, and of twelve on the year 1877, and an increase of four on the year 1876. It is as well to state that during the three months ending December, 1880, I sold about nine miners' rights in consequence of parties going out on a prospecting expedition, the majority of whom were residents on private lands; yet, making allowance for these, there is no falling off in the number of miners' rights during the past four years.

Major's Creek.—There is no apparent improvement in this portion of my division excepting that of the Australian Pyrites Company (Limited), whose manager, Mr. D. Brown, having secured a lease of some 1,500 yards along the bed of the old creek (private land) with the intention of sluicing it, in order to save the black sand and all pyrites lost from the Enterprise and other crushing mills, has been for some time engaged laying down a line of boxes, well-jointed and securely fixed in the ground, as a preventative against floods. These boxes are about 16 inches wide by 2 feet deep, with false bottoms, which are an essential part not only for preserving the outer one but also to save the pyrites, &c. About 1,500 feet long of these are already laid down. One drawback to this work is the delay in getting permission to work through the roadway leading from Elrington to Braidwood. Mr. Brown has the appearance of a practical miner, and not at all afraid to soil his fingers or to wet his boots, and having much experience in the treatment of all pyrites is just the sort of person to embark in such a speculation, which, if successful, will benefit this creek as well as all concerned.

In the alluvial workings little has been done, with the exception of one or two parties at Chapel Flat, who having water from the Back Creek and three large dams are able to take advantage of all showers, and even heavy fogs are a little help. These parties have opened up much ground, but with what results I am not able to say.

Long Flat.—The miners of this place have done rather better than in 1879. Puddling machines are used by all the claimholders, many of whom do a little ground-sluicing in time of heavy rains, by which means they send away much useless dirt and lay bare solid blocks, from which small patches of gold are often obtained.

Back Creek.—There are only a few working at this place, which, like the Major's Creek, is little good without plenty of wet weather. The gold is there, but not enough to pay by any other process of working than by ground-sluicing.

Berlang.—Though the ranges and gullies are auriferous the elevation is too high, and it is only during heavy rains that anything can be done, and this is chiefly by free selectors who reside in the vicinity. It is the opinion of very many that payable reefs exist in these hills, but as yet nothing rich has been discovered.

Quartz-mining.

This branch of mining industry has not progressed during the past year. Dargue's Old Reef at Spring Creek, taken up in 1878 by a Victorian Company, is now at a standstill. About the latter end of 1879 and beginning of 1880 Mr. Edwin Field, the manager, commenced in real earnest to erect dams and crushing-mill, then furnaces and arastras, for the purpose of manipulating the stone and pyrites. As to the latter he has made a signal failure in so far as getting the gold therefrom. From this mine some 1,300 tons have been raised and crushed last year, chiefly from old blocks left by parties who worked the mine previously; and of this 1,300 tons a considerable quantity of the mundic remains untreated,—not a good sign after having spent a large sum of money in the erection of all the before-mentioned machinery.

At the Big Hill, Field & Co.'s mine, 300 tons have been raised and crushed, from which about 2 dwts. per ton of free gold was got, and the pyrites sent to Victoria, where it is expected the gold will be obtained, and that at the rate of from 6 to 9 ozs. to the ton. This mine is now and has been idle for some three months back.

Red Hill Mine (private property) is being worked by Dunshea Brothers, who, having met with mundic, are puzzled as to how they will get the gold. Having their own mill, the pyrites may be saved and kept until an opportunity is presented to separate the gold from the base metals, but working men getting 3 dwts. to the ton of free gold are not in a position to wait long, and no guarantee as to how long. This party have raised 200 tons during the past year, from which they obtained about 30 ozs. of gold,—not enough to pay one man much less four, besides the expenses attached to the working of their battery.

Quartz-mining is not likely to flourish until capital is brought to bear upon it, and, added to this, good management, as without this money would be squandered and the character of the mines damaged. Moreover, where there is such a large quantity of mundic as has been found and may yet be found here, pyrites works should be established on the ground, as the expense in sending the stuff to Sydney or Melbourne would swallow up what ought to be profits.

I am informed that a representative of a pyrites or metallurgical Company in Sydney, in the person of a Mr. Parnell, is now on this creek busily engaged testing samples, with the view of purchasing from the miners, or if sufficient inducement be given the Company will establish a pyrites works on the creek. Many persons have come here for a like purpose, and up to the present nothing has been done, therefore the miners are not very sanguine as to what may follow in the case of Mr. Parnell.

SOUTHERN DISTRICT—LITTLE RIVER DIVISION.

(*P. J. Galway, Mining Registrar.*)

I HAVE the honor to forward my annual report in reference to mining for the past year, and beg to mention that it is almost impossible to obtain reliable information of the quantity of gold won and amount of stuff washed.

195 miners' rights and six business licenses were issued during the year; and although this division had its full share of dry weather, combined with the absence of many miners, induced by sensational reports from Temora and Montreal to visit those places (all of whom have

returned wiser if not poorer men), the gold won during the past year shows a good average to the individual, taking into consideration that one-half the miners are Chinese, and that one-third of the Europeans follow other occupations during a part of the year.

It is with pleasure that I report the taking up of four abandoned quartz claims by Sydney and Braidwood capitalists. Work has commenced on one; the others wait the arrival of pumping machinery. If work is carried on under experienced managers, before many months the Little River will become what was always predicted—an extensive quartz-mining district.

As mentioned in a previous report, forty distinct reefs have been tried, and found to contain gold in payable quantities, work being stopped in the claims by water at the 30 or 40 feet line, a few shafts with very imperfect pumping power going deeper. There was raised 1,096 tons of stone, for a yield of 1,997 ounces of gold, and from 1,000 tons of stone a yield of 775 ounces.

One of the reefs now registered gave 600 ounces of gold in specimens above a depth of 50 feet, and 46 tons of stone gave 37 ozs. 5 dwts.

The Red White and Blue gave 18 dwts. to the ton at 50 feet, when the claim-holders were prevented from working by water, and Burrell's, which is the only shaft that reached 150 feet, returned 271 ounces of retorted gold from 249 tons of stone.

SOUTHERN DISTRICT—NERRIGUNDAH DIVISION.

(*J. A. Berry, Mining Registrar.*)

I HAVE the honor to forward report of the mining division under my charge for the year ending 31st December, 1880.

Nerrigundah.—This portion of the division remains in much the same condition as when last reported upon, and may at present be termed a Chinese settlement. A number of Chinese have gone towards Belimbla and Wandello Creeks, distant about 15 miles from this, and from what I can learn they are getting very little gold.

A nugget weighing 13 ozs. 15 dwts. was found at Deep Creek during this year, by a miner named Daniel Maher. This is the largest nugget unearthed on this field for a considerable number of years past.

I may also state that the present indications do not promise any improvement on this field.

There are in the subdivision 100 Chinese, 22 Europeans; total, 122.

122 miners' rights were sold during the year, and 34 business licenses.

Bumbo.—The Prospectors Reef is still idle, though with a 4-stamper battery on the ground and good gold-bearing quartz. There are only a few Chinamen fossicking in the creeks at this place, their number being included in the Nerrigundah return. The value of the crushing plant is £400.

SOUTHERN DISTRICT—MORUYA DIVISION.

(*W. H. Thomas, Mining Registrar.*)

IN compliance with the directions contained in your letter of the 27th of November last, I have now the honor to submit my annual report of gold-mining operations in the Moruya division of the Southern Gold-field.

Mr. Warden Keightley, whom I have consulted on this matter, has suggested that I should confine my report to that portion of the district lying in the immediate vicinity of Moruya, so that it may not clash with those submitted by other Mining Registrars.

It is to be regretted that the mining prospects, judging from the little that has been accomplished during the past twelve months in this portion of the district, are of so discouraging a nature. That indications of the presence of gold as well as of other valuable minerals abound in the district there can be no manner of doubt, but what the future may have in store for it as a mineral-producing district it would perhaps be hazardous to predict. That every now and again rich patches of alluvial gold will be found I am prepared to believe; but looking at the peculiar conformation of the country, I am inclined to think that the mineral wealth of this district will only be fully developed by the application of enterprise and capital.

Isolated parties have been at work more or less during the whole year, but as far as I can learn their operations have produced very small results. Towards the latter end of the year a party struck what they believe to be a payable gold-bearing quartz reef, within 4 miles of Moruya, but none of the stone has as yet been tested.

Just at the close of the year gold was again found in some abandoned workings at Mogo, but in what quantities I have not yet ascertained.

SOUTHERN DISTRICT—GUNNING DIVISION.

(*J. F. Kenyon, Mining Registrar.*)

I REGRET to state that my anticipations for the past year have not been realized, so far as mining is concerned, in my district. Many persons during the past year have been prospecting for alluvial gold; but although they have succeeded in nearly every instance in finding the colour, no payable quantities of the precious metal have yet been found; and in fact so little has been done in the way of mining in my division during the year 1880 that it can scarcely be said to deserve the name of having an existence. The Dalton Quartz Reef, which I expected so much from this year, I am sorry to say has not been worked for the past six months; and although I feel sure it is a payable reef, the Company formed to work it do not seem at all inclined to go on with their venture, although nothing has yet been done to prove it unpayable. But notwithstanding the gloomy aspect mining matters have in this district at the present, I still hope for a better future; and am firmly of opinion that each of the quartz reefs already known would pay a handsome dividend if properly worked.

I have found it quite impossible to obtain any reliable information with reference to the number of mines in my division. I have issued thirty-six miners' rights for the year 1880, as against fourteen only for 1879, which certainly shows a decided improvement for 1880. I am unable to forward any of the printed forms sent me with your letter of the 27th November, 1880 as none have been returned to me filled up.

SOUTHERN DISTRICT—NERRIGA DIVISION.

(*Samuel Woollans, Mining Registrar.*)

MINING operations in this division are still entirely confined to workings in the bed of the Shoalhaven River and a few of the tributary gullies. No quartz-mining that I am aware of, or any prospecting for out ground. A couple of leases have been applied for in the immediate neighbourhood of Oallin, which are to be worked by steam power employed to raise the water for the purpose of sluicing what are supposed to be payable deposits on the bank of the river. Should the anticipations be realized of this venture, I hope to see many other Companies formed for the same purpose.

SOUTHERN DISTRICT—MONTREAL DIVISION.

(*A. J. Ivimey, Mining Registrar.*)

THE division of Montreal is at present only in its infancy, gold having been first discovered by Williams and party, on the 20th of last September; and although greatly overstated at the first, and subsequently maligned to a corresponding extent, there is every reason to suppose the field will continue to support its present population for at least a twelvemonth on the ground already discovered. But there are two causes why the field is likely to further develop: gold has been found in payable quantities at Corunna Lake, 7 miles distant; and there is at present a small rush to a spot situate between Montreal and the Lake, where as much as 3 dwts. to the dish has been obtained. A small party prospecting at the head of the Bermagui River, 7 miles to the south-west, report gold in small non-payable quantities, but it is a generally expressed opinion that the country lying to the rear of the township—the level country at the base of Mount Dromedary—will yet produce something extensive.

The character of the ground generally is that of decayed sandstone and gravel, intermixed with small pieces of quartz. The wash-dirt is either black or of a dark grey colour, and varies from 10 to 30 feet in depth.

The yield of gold has been extremely difficult to ascertain, owing to the quantities taken up direct to Sydney, of which no account can be made. I have found, however, that about 1,200 ozs. was purchased by the local storekeepers, and the remaining 600 is an approximate estimate of the amount taken privately away.

Nearly all the gold up to Christmas, 1880, came from the Prospectors, and the claim adjoining it to the south on the Beach Lead. From these two claims about 1,500 ozs. had been taken up to Christmas 1880. The inexperience of many of the men on the ground has doubtless gone far to retard the development of the field; and the many disputes that occurred at the outset, owing to the ground being marked off imperfectly by the miners, also prevented much progress being made.

There is a great necessity for proper Government accommodation on the field, and now that the permanence of the field is so far assured, it would be advisable to erect or rent suitable premises in lieu of the tent hitherto used.

SOUTHERN DISTRICT—NERRIGUNDAH DIVISION.

(*A. M. Smith, Mining Registrar.*)

I HAVE the honor to forward my report for the year 1880, on the progress of mining in this division. Since my last report, new discoveries made during the last four or five months have given an impetus to gold-mining industry, and it may be reasonably anticipated that increased activity will follow as prospecting extends.

Wagonga.

The centre of the Nerrigundah division, at the foot of Mount Dromedary, is surrounded by numerous places producing gold. The coast from Wagonga Heads to Bermagui has proved payable, particularly at Corunna and Montreal, where there are some rich claims. Many prospecting parties are scattered over the country in the direction of Reedy Creek and Dignam's Creek, of which at present nothing further can be said than is conveyed in the last report given by Mr. Warden De Boos, viz.:—

"As the work progresses, it is not at all improbable that both Dignam's Creek and Reedy Creek will furnish good claims, though in both of them a large amount of underground water will have to be contended against."

Corunna.

The discovery of payable gold at this place on the sea-beach, about 3 miles south of Wagonga Heads was reported in July last; the gold was found in black sand immediately below the surface of the shore sand, which varies in depth from 18 inches to 7 feet, depending upon tidal influence. The black sand or wash, from 6 inches to 14 inches in thickness, resting on a bed of conglomerate of from 3 inches to 2 feet thick. This conglomerate is composed of quartz boulders, reddish brown clay, and white clay. From what I had seen of Mudgee cinnabar, and the light colour of the gold compared with Mount Dromedary gold, I concluded that quicksilver was present. This hypothesis has since been partially verified by the fact that the prospectors in sinking a shaft on the terrace 90 feet above the level of the beach, and 200 feet inland at a depth of 7 feet from the surface, came upon a silver-bearing strata of 10 feet in thickness, being of a friable composition and easily washed in a dish, in one instance giving 4 grains to the dish, though the average trials gave only a trace of quicksilver. The unfortunate and unaccountable disappearance of the late Mr. Lamont Young, who it is generally believed perished on his way to the place I now write of, which is about 2 miles from the bay where the wrecked boat was found, has for a time left the geological formation of this portion of the division entirely speculative.

Montreal.

Williams and party reported payable gold on 21st September last, at Horse-shoe Bend, Walaga Lake, about 4 miles north from Bermagui, close to the beach. This proving very rich, a rush was the consequence, and within three weeks there were fully 2,000 men on the ground. I however, leave the report of this sub-division to the local Registrar. Many diggers from the out-lying sections of the Nerrigundah division were attracted to the newly discovered field.

Mount Dromedary.

The claims on the mountain continue to give employment to fifty men, which is about half the number that usually find work; the new diggings at Montreal in the meantime accounting for the absent. Cowdroy Brothers started crushing towards the end of the year with an eight-stamper battery driven by a turbine wheel of 16 inches diameter, situated near the top of the mountain, with a fall of 210 feet, the water being confined in a pipe of 7 inches in diameter; the generated power is capable of working up to 15-horse power. It is expected that this reef will pay well as stoping advances, having obtained encouraging results from trial crushings.

The formation of a Company is mooted to work the amalgamated claim of Latimer and Read, which carries good gold. The method of treating the stone from this claim—crushing with an erasta—not proving sufficiently effective, a small battery it is considered would be more suitable and economical, and would probably be erected should a Company be formed.

The quartz claim of Thomas Allen, adjoining the Prospectors (Cowdroy's) is now being worked on tribute, having been taken up by a party of six men.

To get anything like a reliable return of the gold won in each claim is barely possible. The total amount of the whole division cannot be otherwise than nearly correct, by the manner of collecting information of the gold purchased; buyers are careful in recording the locality from which gold is produced, prices varying much, although the distance from different fields may be only a few miles apart. This is very noticeable in the vicinity of the Dromedary. It is gratifying to be enabled to give an encouraging report of this division, as the returns of gold won show an increase as compared with last report, and it is reasonable to look forward to an increase during the ensuing year, judging from the richness of claims on gold, with the prospect of an extension of the field from new discoveries, the whole country around Mount Dromedary being auriferous, and limit unknown, now being thoroughly prospected.

While giving the return of gold produced from the whole of the Nerrigundah division, I leave the report of the Gulph and Bumbo sections to the local Registrar. It may be understood that the gold recorded below has been derived from alluvial ground, the quartz at present taken from reefs not coming up to the ordinary standard of such workings, being only small leaders, and followed up in the expectation of widening out.

Gold produced in the Nerrigundah division of the Southern Mining District, in 1880.

					Total		
	ozs.	dwts.	grs.	Value.	£	s.	d.
Dromedary	554	3	14	73s. per oz.	1,949	15	3
Corunna	77	9	17	75s. 6d. ,,	292	10	1½
Gulph	896	8	16	80s. ,,	3,585	14	8
Montreal	1,575	0	9	78s. ,,	6,142	11	5½
Nelson	4	9	23	75s. ,,	16	17	4
Belimbla	10	0	7	78s. ,,	89	0	0
	3,117	12	7		£12,026	8	10

1879—From all sources, 1,649 ozs. 16 dwts. 23 grs.; £6,264 14s. 6d.
Showing an increase of £5,761 14s. 4d. in value.

SOUTHERN DISTRICT—BOMBALA DIVISION.

(*J. Giles, Mining Registrar.*)

I REGRET being unable to report any decided improvement in mining matters at Delegate during the past year. As mentioned in my last annual report, the gold miners are nearly all Chinese, and I still experience much difficulty in collecting the fees for miners' rights, owing to the apparent desire to evade taking out miners' rights, the number of which issued by no means represents the number of persons employed in gold-mining within the division under my charge.

TUMUT AND ADELONG DISTRICT.

(*Mr. Warden Vyner, M.P., Tumut.*)

IN furnishing the annual report upon that portion of the Tumut and Adelong mining district under my charge, I regret that I am unable to give an account of any marked improvement in mining matters for the past year; they have, however, certainly not been getting worse.

The number of miners' rights issued in 1880 exceeds by eighty-six those issued in 1879, and the quantity of gold forwarded by escort shows an increase for the same period of nearly 3,000 ounces.

Prospecting for new ground has been pursued with considerable vigour in several promising localities, but I am sorry to say the prospectors have not met with the success they deserved.

The discovery of gold at Temora has taken away some of the population already, and when a sufficient supply of water is secured to that gold-field a great many more will follow.

The continued dry weather has been very unfavourable to the prosecution of alluvial mining.

Mining for metals other than gold seems to be almost abandoned for the present.

TUMUT AND ADELONG DISTRICT—GUNDAGAI DIVISION.

(*Mr. Warden W. Love, P.M., Gundagai.*)

I HAVE the honor to submit the following brief report on the Gundagai division of the Tumut and Adelong District.

I regret to state that much of the old alluvial mining here has died out; there are still a few men fossicking on the hills around Gundagai, and there are also a few diggers employed working at a quartz reef in the Bongongolong Ranges, but the work pays but scanty returns, for the present harvest work is more remunerative and has withdrawn most of the miners.

The mining for asbestos, which last year promised so highly for the shareholders, has ceased for the present.

Slate quarries have been opened here during the past year. There is abundance of slate, but for the present work is suspended with the view, I understand, of forming a Company to work it extensively.

The Wantiol gold-field, near Junee, prospected by John Joseph Schafer in July last, has been affording employment to a large number of diggers. The sinking is from 28 to 35 feet, gravelly soil; remuneration as follows:—

	ozs.	dwts.	grs.
Schafer and party washed two loads for	1	0	0
Keefe and party „ „ „ „	0	9	17
Morris and party „ three „ „	0	16	16

This was in October last, when there were about 150 people on the ground; since that time and up to Christmas the field has been more largely developed, the yieldings better, and there have been something like 600 people on the field.

TUMUT AND ADELONG DISTRICT—TUMUT DIVISION.

(*A. B. Hilton, Mining Registrar.*)

GOLD-MINING is at a very low ebb. A good many miners have left Sandy Creek and vicinity for Temora, but a few scattered parties are making wages at Shaking Bog and in other places. The only machinery in the district is the engine and crushing plant at Lacmalac mine, which is unused, operations being abandoned there owing to a trial crushing of 9 tons of stone reduced at Adelong proving unremunerative.

Promising lodes of copper have been found at Bringle Creek and Lobb's Hole; but owing to the abandonment of the smelting furnaces at Snowball, they have not been worked. Mining energy and capital are necessary properly to develop the metalliferous resources of the district.

TUMUT AND ADELONG DISTRICT—ADELONG DIVISION.

(*G. Morris, Mining Registrar.*)

I HAVE the honor to forward my report for last year. So far as the Chinamen are concerned, I fear I am unable to report with that satisfaction I could wish. The bailiff has waited upon them, but "No savey" is all he can get out of them; but I compute the number at fifty actually engaged fossicking, sluicing, &c.

My predictions as to the improvement of this field were correct, notwithstanding Tumberumba gold—some of which formerly found its way to Adelong—is now forwarded direct. Our local Banks have received and forwarded, over and above, during 1880, gold in excess of 1879, value to the amount of £3,281 4s. 4d.

Machinery of a superior class has been erected, greater depths have been reached, and preparations made in our deep mines to raise larger quantities of quartz. During the past twelve months capitalists have come amongst us and have taken up large holdings, so that during the year we have now entered upon we may look forward to a great increase of the precious metal. This state of things is mainly attributable to the assistance given by the Press. The vast resources of the district, through this medium, have been brought under the notice of those from a distance, who have now settled amongst us.

In submitting this my fourth annual report, I do myself the honor of recording the progress made in the development of the mines in this division during the past year; and with a view to do justice to so important a matter I have thought it advisable to visit different portions of this vast district. There was not much addition to the quantity of gold won for several years, the most apparent being last year. The area has been greatly extended in a southerly direction, by adding a great extent of land at Lower Tarcutta. Hillas Creek, which is now known as the Mount Adrah extension, will, in my opinion, eventually become important, it having been visited by mining engineers, all of whom state the country is highly auriferous, and the reefs extend for miles, cropping up on the surface in many places. Trial crushings have shown the yield to average 1 oz. to the ton, shallow sinking; but the great drawback is the want of crushing-machines of the latest improvements, there being only an eight-head battery on the whole of that extensive field, and that can be constantly at work on their own stone. About 100 men have been at work, off and on, during the last twelve months, and have got large quantities of stone to grass, which, if it could be treated on the spot, would pay well; but the men have been short of means, and, after carting the quartz to the Adelong machines, and the cost of crushing, left only a small dividend, and they have returned to work on the reefs at Adelong for wages; but all report well of Tarcutta, and would gladly return if there were machines to reduce the stone. They state the prospects are good. The same remarks apply to Hillas Creek, 6 miles from Tarcutta in an easterly direction. There are six or more well-defined reefs, but no machine; there are also some alluvial deposits; the leads are about 15 feet from the surface, and water plentiful. Tarcutta is an ironbark country, and has a never-failing supply of water, and timber for every requirement in abundance. It is situated on the Main Southern Road, the road dividing the reefs, which are east and west of the main road, and adjacent to the road. At Grahamstown two extensive claims have been taken up since my last report—one by Travers Jones, 56 acres, alluvial, and some powerful machinery has arrived. When the claim is ready for work about sixty men will be employed. The other claim is named the Good Help Gold-mining Co., an extended alluvial claim, 1,600 feet. A deal of work has been done; a great length of substantial fluming has been carried across the flat. At Mr. A. D. Shepard's Royalty Lease above 100 men are at work, and the returns keep up well. This claim is under the management of Mr. W. Ryan. Gibraltar Hill, near Shepard's Town, is now taking the lead, and some half-dozen extended claims are at work, and are all on payable gold. Perkins and party are down about 130 feet. The last three crushings have given a yield of over 2 ozs. to the ton, or £10 a week per man. On the Gap Range some half-dozen extended claims are at work. Butterworth & Co.'s party have averaged 16 dwts. to the ton; they are down 35 feet. The other claims are sinking with good indications. On the Victoria Reef extensive works are near completion. Several claims have erected heavy machinery, during the progress of which the claims have been worked on tribute, and the contracts have paid well in most instances. Mr. Bolton Molineaux has erected a battery of twenty head of stamps, and laid down a tramway from his claims. He has imported a splendid locomotive, which for the present is idle. The rails are too light, and some expensive alterations have to be made to utilize the tramway. The number of claims working on the reefs is about thirty. There are three crushing-machines at work at present. At Sharp's Creek, about 6 miles south-east from Adelong, some six claims are sluicing, but there is a scarcity of water. There are Chinamen working up the Adelong Creek, but I cannot ascertain any information from these Mongolians. I have every reason to think there will be a great improvement during 1881. Want of capital, skilled labour, and appliances have much retarded progress on this field, but I am glad to say efforts have been made to induce men of means to visit the district, and there have been many strangers, men of practical experience, come amongst us, which may at no distant date cause others to expend capital in developing the vast resources of our gold-field. Should this improvement take place, our population will be under great obligation to the Sydney and local Press. But for publicity given, hundreds of those engaged in mining pursuits would never have learned the amount of wealth which abounds in this part. Some difficulty was experienced four years back to impress upon our miners the necessity of providing themselves with miners' rights, but this difficulty has to a certain extent been got over, and men who have worked for years without them now take them up freely; for instance, the following figures will show the gradual increase in numbers during the past four years:—In 1877, 230 rights; in 1878, 336; in 1879, 407; and in 1880, 440. The men looked upon the call upon them arbitrary, causing at times some unpleasant remarks, but the feeling having died away, there is now no difficulty. Very few Chinamen take miners' rights,nor is it possible to induce them to do so, although every exertion has been made. As a rule, mining in this division is in a healthy state, and very few men are out of work. I have the honor to append reports from a great portion of the claims, but some decline to fill up and return the forms.

The Joint Stock, a local Company whose claim is adjoining, and north of the North Williams Gold-mining Company, Victoria reef, have been perseveringly and silently carrying on the operation of sinking for the last two years. The shaft, which is approaching a depth of 400 feet, is expected to reach the influences which apparently contained in the west wall, as they have done in all the tried ground on the Victoria line southward; and as this Company may be said to comprise the flat of the Williamstown Gully sectionally, there are in existence, and within 100 feet, many tried leaders containing gold. At one time one of these, now designated Poverty, has yielded in small patches as much as 2 ounces to the ton, and various lots 1 oz. to the ton. The bearing point of this leader is directly opposite on the west wall of the Joint Stock; striking a line from this spot to north, it seems to take the direction of the disused excavation made in olden days by Mr. Williams, sen., for conserving water for the use of his crushing-mill. A fact which may not be known is that several fine specimens were discovered by excavators in the uppermost portion; no tracing was made, and from whatever quarter these loose pieces sprang, there is no solution to the present day. The shareholders in the Joint Stock possess the best qualifications for carrying out this prospect of enterprise, viz., indomitable pluck, and means. Sanguine of the probability of success, which variety of circumstances predict, and backed by the energy of the workers, it is to be hoped that within another hundred feet will make a payable and permanent discovery. Since writing the foregoing, Messrs. Collier and Burgoyne have applied for a prospecting area 600 feet × 1,200 feet at Tarcutta. Burgoyne was one of a party who went into the ground eighteen months since, and I learn from him that the ground is soft and he has re-commenced, he having an idea crushing plant will soon be erected; but unless they have Chilian mills they will not be able to save the gold. The small machine, a very good one, owned by the Messrs. Saxon, has only tables, but as they are practical men, they will, now they know the nature of the ground, get the necessary appliances. On the reefs some good and powerful machinery has been erected, which is now working to the satisfaction of the shareholders, and there is no doubt that much more gold will be won during 1881 than in 1880.

A Silver and Lead Company has been floated in Adelong; the lode was discovered about twelve months since, but the owners of the land declined to allow mining. The present owner, Mr. Hume, the proprietor of the Everton Estate, about 15 miles from Yass, has now signed the agreement, and a party of miners have left Adelong, who will commence work at once. The extent of land taken up is 150 acres. The number of shares will be 30,000. I have the honor to enclose some papers; the forms from the claims will follow, as I have not yet received them all. I find a difficulty in this respect, as great objections are offered by the managers to furnish the necessary information, the bailiff having made several visits to collect the returns.

Gibraltar Hill, situate about 2 miles north-east from Adelong township, has six claims in full working. This portion of the gold-field under my charge is likely to turn out well; the yield is calculated to turn out about 2 ozs. to the ton. A great drawback to the property of Gibraltar is this,—that the reefs, in most instances, are so situated that there is great difficulty in getting the quartz to the crushing-machines. A machine, it is thought, could be kept constantly employed from these claims alone. A large machine for crushing the stone, saving the gold, and treating the tailings, would be well patronised, and would be of incalculable service in assisting the development of the mining resources in this locality. As regards water for crushing purposes there would appear to be no difficulty; the gorges are steep and narrow, and a large quantity of water rushes down after a storm or shower; suitable places for dams and reservoirs are not difficult to find. In conclusion, I think there can be but little doubt as to the permanent character of the gold-fields in this division, their extent is now very large, and is increasing, as new discoveries of reefs are continually being reported. There are at the present time about thirty payable claims on Adelong, including leases.

I annex a return of the gold won on this field during the past year, which is as accurate as I can make it from the information I have been able to obtain. I cannot separate the alluvial from the quartz, but I conclude that about one-third would be alluvial and two-thirds quartz.

Return of gold won on the Adelong division of the Tumut and Adelong Mining District, during the years 1879 and 1880:—

				Value.		
1879.	ozs.	dwts.	grs.	£	s.	d.
Commercial Bank	2,463	17	6	9,214	0	0
Bank N.S.W.	8,539	15	7	33,732	1	5
	11,003	12	13	£42,946	1	5
1880.						
Commercial Bank	3,835	0	21	14,421	0	0
Bank N.S.W.	8,181	8	12	31,805	5	9
Total	12,016	9	9	£46,227	5	9

Showing an increase in cash for 1880, £3,281 4s. 4d.

NOTE.—The above is a return of gold, purchased or otherwise passed through the New South Wales branch at Adelong, also the Commercial branch, Adelong, during the years 1879 and 1880, and the amount sent by escort.

TUMUT AND ADELONG DISTRICT—GUNDAGAI DIVISION.

(*C. W. Weekes, Mining Registrar.*)

THE mining throughout this district during the past year has been of a desultory character, more fossicking and prospecting than mining, and there have been no results worthy of record. The present rush near Junee has every appearance of furnishing matter for a favourable report for the current year; being yet in process of development, reliable returns cannot be obtained.

TUMUT AND ADELONG DISTRICT—KIANDRA DIVISION.

(*C. E. Stoyles, Mining Registrar.*)

I DO myself the honor to report the progress and changes of this field since my sixth report of 1879.

I estimate the amount of gold won, at 1,500 ozs.

The number of miners' rights issued is	145
" business licenses	2
" mineral licenses	nil.

During 1880 two lease applications were received, one for a well known reef named the Charcoal, the other being for a reef which has long been held in high esteem by reefers—I allude to the Three-mile. In each of the above applications 6 acres were asked for.

There has, however, been a considerable reduction of miners in this division, owing to the poor results obtained from the Seymour field.

There have been highly coloured accounts of the last-named field, but all to end in disappointment to the prospector and small speculator until the proper ground shall be discovered. Here the boring-rod is about to commence operations, and the Company, buoyed up Mr. Clarke's high opinion of this tract of country, are extremely sanguine. The small claims about Kiandra are still worked in evidently a hand-to-mouth fashion; other modes of working cannot be expected until the vexed question of a water supply is settled either by Government money or by the capital of private speculators.

Geological surveyors have reported on the country and mining surveyors have run their lines, but there the matter apparently rests.

The amount of water available during 1880 was considerably below the yearly averages of 1878 and 1879, being only about seven weeks duration.

Tunnelling is carried on by only one small Company, who have gone over 1,000 feet and tested the different qualities of the hill known as New Chum.

The old tunnel in the Township Hill, put in under the superintendence of one Rhoden Chricton, is at present idle, and the experienced ones remark that the hill had an unfair trial.

The Great Emperor Tunnel is also idle, though held by one of the residents of this division. Though beyond a doubt there are good deposits of gold in the ranges and hills visible around us, the method of working is too expensive, and the winters evidently strike terror into the minds of down country speculators.

Shaft-sinking is not carried on at present, although the country bears traces of the shallow holes of the prospectors, many of whom spent considerable time here on their return from Bermagui and Temora.

The original diggings, known as Pollock's Gully and Whipstick, are worked by Chinese, who seem here to be content to live on a hard-earned pittance; few hardly ever leave once they have commenced to work, and some of their dwellings are permanently erected.

I am unable to furnish particulars of nuggets found in their claims, but was shown some fine pieces weighing 2, 4, and 5 ozs. respectively, which were obtained at the Four-mile Creek Falls, where an extended alluvial claim has been opened and over 100 feet of a tail race 3 x 3 shot into the rock.

About 1,500 ozs. of gold have been won this short season; and although the field has suffered from scarcity of water, there still remains its hundreds of gold-bearing acres, which require only the capital or natural waterfall to prove Kiandra as one of certainly not the least important gold-fields of New South Wales.

TUMUT AND ADELONG DISTRICT—YARRARA DIVISION.

(*J. K. Armstrong, Mining Registrar.*)

DURING the earlier months of the year just closed there had been scarce any change from the general dulness that prevailed at the end of the previous one. By degrees however some of the old hands, who had taken a run to see what was being done at a rush on the Victorian side of the border, returned to their old haunts about here and worked away while the supply of water, which is usually good from the middle of autumn to latter part of spring, enabled them to keep going at their old-fashioned style of ground sluicing, in one or two instances with a degree of success sufficiently evident from appearances (the claim-owners themselves being very reticent on the subject) to encourage some fresh hands to try their luck when the rainy season comes. At the present time there is less water in the creeks than for years past—even springs that were considered inexhaustible have failed.

About the middle of the year half-a-dozen prospectors came to give a further trial to ground on the Four-mile Creek side, where they had some time previously, during the quartz-reefing days, got a rather promising alluvial prospect; but when they came fairly to attempt to work in this particular place, called the Basin, the water at a depth of about 50 feet proved too much for them. They then moved to a drier locality, where they put down (slabbing as they went) a whip shaft which enabled them, notwithstanding a very considerable quantity of water, to bottom at close on 100 feet. The prospects 8 or 10 feet up encouraged them greatly, but unfortunately the gold at bottom did not realize their expectations; this they represented as half payable, and worth a trial; but just then came the exciting news from Temora, proving the greater attraction. They left hurriedly, intending to return some day, so they said, but have not done so as yet.

There are some men prospecting for quartz-reefs not far off, on the ranges dividing the Copabella and Yarrara watersheds, from whom as yet comes no report of success. Although spoken of by many old hands as having some amongst them fairly payable under proper management, the reefs here are still unworked, but all the machinery remains except an engine from the Four-mile Creek crushing-machine, which was taken away in July last, the prospectors I imagine not having the same confidence in the revival of work at Four-mile Creek as they would appear to have in its starting again at Yarrara, where the principal part of their plant is located.

The Jingellac Tin Mines, under the auspices of a Melbourne Company, made something of a start during the year. Some mineral licenses were taken out, and fresh ground and water privileges secured. The Company have selected a considerable area, preferring this mode of holding the land.

The actual work done as yet does not, I am informed, amount to very much. While the water lasted some tons of stream tin were extracted; at present there is not water sufficient for washing—nor even enough to supply the machine, and what work is now being done is chiefly confined to sinking for and taking out the tin-bearing quartz, a considerable quantity of which is now at surface. The prospects are promising; the tin is of good quality and pretty abundant. There cannot be just now much certainty as to quantity extracted or its actual value.

TUMUT AND ADELONG DISTRICT—ALBURY DIVISION.

(*J. C. W. Crommelin, Mining Registrar.*)

THE mining is now looking up; there are now about eighty miners at work on alluvial, but it is impossible to get a correct return from them, the most of the gold being sold in Victoria. Gold-mining is only in its infancy, but the year 1881 will show a vast improvement; the people are now anxiously awaiting the issue of their leases in order that they may commence work at the Old Nail-can.

TUMUT AND ADELONG DISTRICT—COROWA DIVISION.

(*J. H. Louche, Mining Registrar.*)

I HAVE the honor to report that of the thirteen men who took miners' rights and sought for alluvial gold, none of them found it in payable quantities on reaching the bottom, and that they have all ceased to dig.

TUMUT AND ADELONG DISTRICT—REEDY FLAT DIVISION.

(*T. Rogers, Mining Registrar.*)

THE return of alluvial gold in this district has been very small indeed for several years past, in consequence of most claims being nearly worked out. The actual yield it is impossible to obtain, but it was of little value, leaving most of the miners indebted to the local storekeeper, causing many to leave the district and abandon their claims.

In quartz-mining nothing has been done save prospecting, except in one claim where a quantity of gold was obtained from a vein or granite dyke; this granite dyke is clearly defined between a foot-wall composed of basalt, soft from the surface to the water level, at 60 feet.

TUMUT AND ADELONG DISTRICT—TUMBARUMBA DIVISION.

(*H. M. Langford, Mining Registrar.*)

SINCE my report of 1879, a new reef, situated at Willard's Gully, Upper Tumbarumba, has been prospected by Messrs. Lewis & Co. The stone looks really well, and the prospectors are so well satisfied with the result of their labours they intend to procure suitable crushing machinery to work the ground. Work on the Nevada Reef, Paddy's River, is still suspended, nor do I see any probability of its being resumed.

Messrs. Storey & Co., who have expended about £700 on their claim during the past year, are still prosecuting their labours with satisfactory results. There are five men efficiently employed on this claim. The Pilot Reef Company's leases, New Meragle, Nos. 2 and 3, comprising 13 acres. Work on these reefs is at present nearly at a standstill, owing to the want of proper appliances for extracting the gold from the pyrites. I am informed it has been found that there is only about one-third of the gold saved with the ordinary appliances. It is the opinion of many that these mines would prove highly remunerative were proper machinery placed on the ground.

The principal alluvial mines in this division are those of Messrs N. N. Gitchell & Co., who are still carrying on their extensive works at the Burra Creek, with very satisfactory results. For minerals other than gold the returns are nil.

PEEL AND URALLA DISTRICT.

(*Mr. Warden Mair, P.M., Armidale.*)

I HAVE now the honor to make my report on the state of mining matters during the year 1880, in that division of the Peel and Uralla mining district for which I act as Warden.

Walcha Division.—On account of the severe illness of Mr. Love, the Mining Registrar at Walcha, I have not received from him any report as to what has taken place in his division of this district during the year 1880. There has not been, however, any discovery of importance made during that period. Mr. Love will doubtless forward to you his report as soon as he is able to attend at his office.

Uralla Division.—The report of the Mining Registrar at Uralla now forwarded to you shows that, although the number of miners' rights issued by him last year was slightly in excess of the number issued at the same place in 1879, the quantity of gold won last year was less than one-half of what was produced in 1879. The Mining Registrar attributes (no doubt rightly) the smallness of the yield from the sluicing claims in his division to the scarcity of water that prevailed last year. During the last eight days, however, a somewhat copious fall of rain has taken place, which will enable the holders of such claims to proceed with sluicing operations. The expectations entertained a year ago as to favourable results that might be looked for from the expensive workings of the Long Tunnel and the Bullion Gold-mining Companies have not yet been realized.

Armidale Division.—As will be seen by report addressed to you by the Mining Registrar at Armidale, the gold produced in the Armidale division of my district was much smaller in amount in 1880 than in 1879; but the discovery in the early part of last year of large deposits of antimony at Gara Falls led to the issue of twenty-three mineral licenses during that year. The same discovery led also to thirteen applications for mineral leases of land at Gara Falls. Three gold-mining leases of land at the same place have been applied for. Messrs. Moore & Company, who are now mining there for antimony, have sent to Sydney 50 tons of ore. A large quantity, the amount of which I have not been able to ascertain, was previously sent to the same place by Evershed & Company. The lode in one of Moore & Company's two shafts is from 10 to 16 inches wide. The ore from one of the shafts is dark in colour, and, as I am informed by Mr. Moore, has yielded, on assay, 56 per cent. of antimony and 1 oz. 2 dwts. of gold to the ton. The ore from the other shaft has yielded 66 per cent. of antimony.

As there is an abundance of timber for smelting purposes close at hand, it may reasonably be hoped that these deposits will prove very valuable.

An application has also been made for a lease of land for the purpose of mining for antimony at Aberfoil, about 36 miles north of Armidale.

PEEL AND URALLA DISTRICT—BINGERA DIVISION.

(*Mr. Warden Brougham, P.M., Bingera.*)

I HAVE the honor to submit my annual report on the state of mining matters in the Bingera division of the Peel and Uralla Mining District under my charge in 1880.

Hitherto mining operations have been confined to gold and copper.

Bingera.—At Upper Bingera the yield is still good on the Wet Lead. Owing to the dry season the miners have not had the same body of water to contend with; the sinking is from 28 to 35 feet, at which depths the water in wet seasons becomes troublesome—so much so that the tail-races will not carry it away sufficiently to enable them to prosecute their work.

Madden's party on their leased ground gained a good yield of gold. For some weeks they were averaging £20 each per man (seven men); the yield fell off, but since that they have averaged £7 a week. From all appearances they have yet two years' work on their leased ground. Other parties have applied for leases on the Wet Lead, commencing from Madden's and other measured portions; when these are issued and the holders at work the return will be good.

The gold gained from this field still preserves its well-merited reputation of being the best in my division, and is certainly worth from one shilling to eighteenpence more per ounce than any other.

The Chinese have a large quantity of washdirt stacked; they are waiting for rain, when they will have a handsome return. Boro, Spring Creek, and Bobby Whitlow are being worked, but only by a small number of miners. The yield at the three fields has been small, but as a rule the men have made wages.

138 miners' rights have been issued at Bingera, holders of which have been at work on the fields mentioned above.

Copper.—It is a matter of regret that the owners of the Prince of Wales mine at Bobby Whitlow have neglected to work their ground, as the ores are of good quality, and if *properly* worked would prove remunerative. This mine *me judice* will only pay when the parties can erect smelting furnaces and send ingots in lieu of crude ores to market, as they can by that means utilize the inferior ores with the superior ones, seeing that *en masse* they will not pay for carriage to Newcastle and leave a margin for profit, as the residuum of the inferior ores would be so large. I refer to this mine in particular as I personally measured all the leads in the shaft, as well as forwarded samples of ores taken from the mine by myself for analysis to your department, which showed a very good percentage of copper with traces of gold and silver.

Barraba.—Including Tea-tree Creek, Crow's Mountain, Ironbark, Ironbark Junction, Wood's Reef, and Paling Yards.

At Tea-tree Creek in the early part of the year gold-mining was prosecuted with energy and several leases were applied for, but the absence of rain precluded the owners from gaining as much gold as they ought to have done. They were obliged to stack their stuff, yet they, by crushing by hand, were enabled to go on with their work and pay their way.

I am glad to say that an enterprising firm, Messrs. McDougall & Company, have now sent up a quartz-crusher with a 12-horse power engine. By this means these claims will be properly worked and tested, and I anticipate a good, nay a much larger return than has gone from Barraba since I have had it under my charge. Milsom & Company's claim (lease) shows well, and when he has subjected his quartz to the crusher I fancy a good return will result to the owners.

Fletcher, at Crow Mountain, has out of 60 tons of quartz realized 30 ounces of gold, with machinery so indifferent that the tailings would much more than pay for remanipulating. At Ironbark, Ironbark Junction (Wood's Reef), some fifteen or twenty miners have been at work, who have barely made wages.

Miners' rights issued at Barraba, fifty.

Yield of gold in my division as follows:—

	ozs.
Bingera	1,680
Barraba	400
Total	2,080

Irrespective of this amount there is a quantity of gold which has been sent down by private hands and the Chinese, from whom it is next thing to impossible to get a correct return.

PEEL AND URALLA DISTRICT.

(*Mr. Warden Irving, P.M., Tamworth.*)

1. The only description of mining prosecuted in the portion of the Mining District of Peel River and Uralla under my charge is mining for gold; and the history of the gold-mining during 1880 is a very uneventful one. There have been no fresh discoveries of quartz veins or of alluvial deposits.

2. The annual report of Mr. Kermode, Mining Registrar at Nundle, for 1880, furnishes an exhaustive account of the mining for gold at Hanging Rock, Nundle, and Bowling Alley Point, with minute details as to depths of shafts, extent of tunnelling, and yield of gold, in each quartz and alluvial claim.

3. The "alluvial cement" leads, as they are locally termed, on Mount Misery and at Hanging Rock have been energetically mined by the various claim-holders. A great deal of work has been done in tunnelling, and machinery to crush has been procured. The results of mining this cement have not been, so far, favourable in the degree I anticipated in former reports. However, the claim-holders are hopeful, and but for the extreme dryness of the season, which has caused a scarcity of water, I believe a great deal of labour would have found employment on these cement claims.

4. Some of the quartz claims near Hanging Rock have had good returns for the quantity of stone raised, as will be shown in the return I append of the yield of gold from stone crushed at Bowling Alley Point steam crushing machine, from Hanging Rock. Some of these claims are at present not being worked, from want of capital to purchase machinery to get rid of the water.

5. There are very few ordinary alluvial claims now being worked.

6. I note Mr. Kermode gives the number of miners employed during 1880 as 243 on the Crown Lands, and 30 on the estate of the Peel River Company, 273 in all, and he estimates the yield of gold to have been of the value of £13,718. This would make each miner's yearly earnings only about £50 average. As some claims are known to make a much better return than this average, some miners must be earning very little. It is difficult to arrive at a correct estimate of the quantity of gold sent away from the gold-field, as a great deal is sent privately; and it is to be hoped Mr. Kermode's estimate is too low, and that the miners are better remunerated than his estimate of the gold won would establish. The great scarcity of water, no doubt, has had a great share in causing the quantity of gold for the year 1880 to be so small.

Through the kind attention of the proprietors of the Marquis of Lorne mine, on the Peel River Company's estate, I am able to give some particulars about that mine, which is the most promising one at present on the river Peel. Though not on the Crown Lands, I have no doubt the same reef is to be found on the latter.

"Marquis of Lorne quartz mine, opposite Bowling Alley Point, leased from the Peel River Land and Mineral Company (Limited). The lower level is now in 500 feet; when it is in another 60 feet, work can be done clear of water at a depth of 900 feet from the surface. The reef is hard, and averages 6 inches. No. 1 shaft sunk 60 feet; No. 3 shaft sunk 80 feet; level in bottom 60 feet. A steam pump with 400 feet of piping keeps the workings at present dry. 400 tons of quartz from the mine crushed at the steam machine at Bowling Alley Point (owned by the proprietors of the Marquis of Lorne) averaged 2 ozs. 15 dwts. per ton. The Marquis of Lorne machine at Bowling Alley, driven by steam power, has 10 head of stamps, a Berdan basin, tables, and other appliances in good order, and the prospects are encouraging. The Price's Hill reef has been again taken up by a Company, and a reef opposite Swamp Creek is being prospected. These reefs are on the Peel River Company's Estate.

"There have been crushings at this Bowling Alley Point machine, of quartz raised on the Crown Lands, as follows:—

"Foley's reef (from tip) 300 tons, averaging 10 dwts.
Foley's reef (from level) 20 tons, do. 1 oz. 10 dwts.
Opossum reef, 300 tons, averaging 19 dwts.
Hanging Rock, 150 tons, do. 3 ozs.
Small lots from Prospectors, 40 tons, averaging 10 dwts."

My correspondent concludes his letter thus:—"The future of this gold-field will be the quartz reefs. There are many reefs in the neighbourhood of Bowling Alley Point, on the Peel River Company's Estate, and also on Government land, which would yield a good return if capital and labour were judiciously employed."

7. Of late years some little mining, chiefly for alluvial gold, has been carried on, very fitfully, the miners coming and going, at a locality some 25 miles from Tamworth, near the railway extension Tamworth to Uralla, on the Swamp Oak and Mulla Creeks. No reliable report of the gold obtained has ever reached me. The field must be very limited, as only eight miners' rights have been taken out by persons intending to mine there, as yet, for the year 1881. A gold-mining lease was applied for on Swamp Oak Creek in 1880, but I believe the applicants are not working their ground at present. I believe the gold obtained at Swamp Oak Creek and Mulla Creek is in thin scales.

Peel and Uralla District.

(*Mr. Warden Martin, P.M., Glen Innes.*)

The impetus given to mining industry in my division in 1879 was well sustained throughout 1880, and in consequence the output of tin ore rose to 3,960 tons, being 981 tons in excess of the production of the previous year. Of this amount 1,828 tons, or nearly half, was obtained from the deep leads at Vegetable Creek, which are now taking front rank for productiveness, as was to be expected from the indications of richness shown in the early part of the past year. From the many apparently valuable tin lodes known to exist in the district nothing has yet been obtained, but better prospects are opening out in this direction, as the Great Britain Tin-mining Co. have men employed putting down shafts on their property at the Mole Tableland, with a view to test the reef preparatory to placing a crushing plant on the ground. In deep ground prospecting has been carried on with energy and determination, and failure after failure did not prevent the prospectors from thoroughly testing the supposed courses of mineral veins.

In very many instances operations have been stopped on reaching the drift, by water rising in the shafts so fast and in such quantity as to baffle all attempts of the miners to keep it under with the appliances ordinarily at their command, and in consequence sinking in very likely places had to be abandoned before the bed rock had been reached. With adequate pumping machinery these claims may yet turn out well; but if the drift should be deep, they will always be difficult and dangerous to work. Labour has been abundant, at rates ranging for Europeans from 6s. to 8s. a day, and at an average rate for Chinamen of 30s. per week, without rations.

The tribute system is applied wherever practicable on the tin mines, at an average of £27 per ton. Under this system the mines are cheaply and expeditiously worked in the interests of the owners; and as the tributors themselves sometimes net large sums, the system is equally popular with the working men.

There are about 1,100 European miners in this division, and about 1,500 Chinese.

Returns from the smelting works at Tent Hill show that an average of thirty-five men were employed there, and that 32,005 cwt. 3 qrs. 4 lbs. tin ore, at an average price of £44 15s., was received, giving on reduction 22,619 cwt. 1 qr. 16 lbs. of metal. About two-thirds of the ore and metal produced in the district was sent for shipment *viâ* Grafton, at an average rate of 5s. per cwt., the balance going by way of Brisbane, at the same rate for carriage.

Gold.—In this branch of mining very little advancement has taken place, the only sustained effort to develop the riches of our reefs having been made at Kookgrabookgra, about 40 miles by road south-east of Glen Innes. Several shafts were put down at this place, the stone from which assayed 12 and 14 dwts. to the ton, but no capital being forthcoming to establish a crushing plant the field has been virtually abandoned. At Starlight Reef, Oakwood, a tunnel is being put into the face of the mountain with a view to cut and test the value of the stone in No. L3S claim, and the result, if favourable, will probably lead to active operations being started for the development of this long-neglected property.

About 100 miners (Europeans and Chinese in equal numbers) are working the old fields at Oban and Glen Elgin, and average fair wages.

Bismuth.—Although bismuth has been long known to exist in the district, mining for the ore is an industry only six months old, and was commenced at Kingsgate, 18 miles easterly of Glen Innes. Originally the land at this spot was taken up for tin, but indications showing that ores of bismuth were abundant, led to that metal being alone mined for. The lodes in which the ore is found are 6 to 8 feet wide, with an east and west bearing, and probably a north and south connection. There are many of them exposed on their bearing for a length of about 10 chains. The matrix is quartz. The country is rough and wild, and of granitic formation, backed by basalt-covered table-lands about 3 miles distant from the mine. Timber is abundant, and water from permanent streams can be easily brought by race on to the ground.

The manager of the Kingsgate Mining Co., in his report for the half-year ending 11th December, 1880, states that

4½ tons of ore, containing 50 per cent. of bismuth,
30 „ rock ore, „ 5 to 10 „ „
30 „ slimes, „ 5 „ „

and 2,000 tons quartz, by assay value £4 per ton, were won from the lode during the six months by the labour of six men and boys from an open cutting, and without the aid of machinery. Samples of native bismuth from this mine shown me weighed from 1 to 2 pounds. 4½ tons of ore from the mine were forwarded for sale to London, but as account sales have not yet been returned, I could not ascertain the market value. With the copper and lead alluded to in my former report nothing at present is being done.

At the Red Range, 12 miles east of Glen Innes, sapphires of different colours, transparent, but not large in size, are often picked up on the surface after rain, but no attempt has been made to mine for them. Topazes of large size and rock crystals of great beauty are very common in the tin and gold workings. Garnets are also frequently met with, but not of any commercial value.

PEEL AND URALLA DISTRICT—INVERELL DIVISION.

(*Mr. Warden Fraser, P.M., Inverell.*)

LAST year I reported that prospecting was being vigorously prosecuted on the red ranges between Inverell and Tingha. This resulted in a very large discovery of rich alluvial deposits, at depths varying from 4 to 70 feet. Large areas of land have in consequence been taken up under mineral leases, and increased vigour is displayed.

Our population rapidly increased, and now numbers about 1,400 souls, the Chinese element preponderating. During the last twelve months the concentration of population at Stannifer, about 6 miles north-east of Tingha, resulted in the usual accompaniments of a bush township. This little village has now several stores, three public-houses, blacksmiths' and saddlers' shops, &c., &c. I am, however, inclined to think that the speculation was premature as regards the site chosen, as the bulk of the recent deep-lead finds have tended westward, and already similar attempts are being made to meet the requirements of the miners in that direction. Until the numerous lodes on this field are opened up, the centres of population must fluctuate.

I estimate the total twelvemonth's yield on this field at fully 1,722 tons, worth at the mines £72,324. The dryness of the past season has almost entirely prevented ground-sluicing operations, consequently several hundred loads of wash-dirt raised lie waiting for rain. On several of the claims the washdirt has been carted nearly 2 miles to the creek, where washing operations have been carried on by horse-power pumping.

The keen pursuit of wealth has induced a careless disregard of personal safety, by neglecting the ordinary precautions adopted for supporting the drives in the mines, and the lowering of the timber supports. The result has in two instances proved fatal—one by the falling in of several tons of earth, the other by the throwing down of props instead of lowering them by ropes. It is most desirable that the visits of an Inspector of Mines be more frequent, and that any breach of regulations be rigorously punished.

None of the numerous lodes on this field are being worked at present. During this year a Company was formed for working the Ruby Hill alluvial deposits. This property is situated in the parish of Lockerby, about 12 miles north of the township of Ashford. As the Company was formed only a few months ago, little more than opening up the ground has been accomplished. The manager reports favourably of their prospects. "The sinking," he states, "is 25 feet, and the average depth of wash-dirt is 4 feet. We work two horse-powers and a puddling machine. The washdirt is at present carted about a quarter of a mile to the creek, but we purpose constructing a tramway, with trucks, by which means we hope largely to increase our output." This Company employs twenty-five men, and with present appliances their output is 4½ tons per week. The cost of winning the ore is £17 per ton. As yet I have been unable to visit this mine.

During the lengthened drought the miners on this field have been endeavouring, by the construction of dams and races, to conserve water for the working of their back blocks. Should we have rain, I anticipate the yield of next year will exceed that of former years. I have unbounded confidence in the general stability of this field. Mr. Jones, the Mining Registrar at Tingha, supplies you with full particulars in his report, so I need not recapitulate. My thanks are due to Messrs. S. W. Moore, of the Britannia—W. Litchfield, one of our largest local buyers—W. Kennedy, manager of the Union Co.—Henry Moore, manager of the Ruby Hill Co.—for the valuable statistics. Others to whom I applied for information have as yet failed in responding.

PEEL AND URALLA DISTRICT—ARMIDALE DIVISION.

(*E. Markham, Mining Registrar.*)

HEREWITH I have the honor to forward my report on the gold-fields and antimony mines for the Armidale division of the Peel and Uralla Mining District.

During the last year mining matters in this division of the Northern Gold-fields have been very dull, and now that Oban and Bora Creek are cut off from this district there is very little mining for gold.

The principal gold-fields that are now worked are Cameron's Creek and Puddledock.

Cameron's Creek.—For the last eighteen months there has not been any mining on this creek, save a little carried on by Chinese.

On a part of this field Mr. Gallagher has erected a quartz-crushing machine at a cost of £1,000, but I am informed by him that it has not been at work these last two years, owing to the short supply of water.

I cannot furnish an account of the amount of gold won from this field, as it is all sold by Chinese.

Puddledock.—This field seems to be the only one in this division from which payable gold can be obtained. I am informed by Mr. Teege, an old resident in this locality, that on this field, on the chief part of it, there are eight Europeans and three Chinese at work; but owing to the scarcity of water mining operations are almost at a standstill.

He has four men at work in a sluicing claim at Bow's and Navigator's Gully, from which he obtained 22 ozs. 5 dwts. 16 grs., equal to the value of £84 2s. 4d., and from another claim worked by Ah Shee and Ah Gong (two Chinamen) the amount of gold raised was 18 ozs., to the value of £67 10s.

In another sluicing claim, held by Messrs. Taylor and Lynch, the amount of gold won was 65 ozs., to the value of £242 2s. 6d.

Antimony Mines.—The only mining of any interest in this division seems to be for antimony alone, as it is found in large quantities in the vicinity of Gara Falls and neighbourhood, where a number of leases have been taken up.

On the 16th of January instant I visited the mines at Gara Falls, and found that Moore and party are the only ones engaged in active work.

This Company, on a lease of 4 acres, have nine men at work and two shafts sunk to the depths of 26 and 35 feet, at a cost of about £200; and I understand it is their intention to erect furnaces on the ground and smelt the ore, instead of sending it to Sydney.

These mines were first discovered by a man named M'Bean, now of the firm of Moore and party.

In the end of 1880, in obedience to instructions, I forwarded the necessary forms to Mr. Moore, who resides in the town, but up to the present have not received any information from him, and am therefore unable to supply particulars respecting the doings of this Company more than I have stated.

About April, 1880, Messrs. Evershed and party took up several lots and erected machinery for smelting to the value of £900, but subsequently disposed of their claim to Mr. James Glass, the lessee of the Gara Run, with whom their interests clashed; and although they went to this expense, they had not the opportunity of smelting any ore, in consequence of not having a practical man.

Others hold leases but have never worked them.

Hargraves Falls.—These mines are situated about 19 or 20 miles in an easterly direction from Armidale, on the opposite side of the falls to those known as Gara Falls Mines.

Five leases have been applied for, but nothing of any importance is done, as most of the ore is taken from the surface.

Aberfoil.—There is one application for a mineral lease by Messrs. Moore and Warner, but they have not yet started to work.

The number of miners' rights and mineral licenses issued from this office during the year ending December, 1880, was as follows:—Miners' rights, 64; 59 to Europeans, 5 Chinese. Mineral licenses, 23; all to Europeans.

The quantity of gold purchased by the Banks and principal storekeepers in this division amounts to 240 ozs. 3 dwts. 2 grs., value about £879 18s. 9d., being a large decrease on the previous year.

PEEL AND URALLA DISTRICT—NUNDLE DIVISION.

(*S. Kermode, Mining Registrar.*)

1. *Bowling Alley Point.*—Mr. J. P. Robitson and party have raised 10 tons of quartz from the old Foley's Reef, which yielded 10 ozs. of gold, or 1 oz. to the ton of stone; this was taken out of the tunnel some 400 feet in the hill. Also the same party crushed 350 tons of tip quartz (this is old quartz which was thrown away some time back); it yielded 5 dwts. of gold to the ton.

2. J. P. Robitson and party have raised 500 tons of quartz out of the old Opossum Reef, which yielded 10 dwts. to the ton; this was taken out of the 500 feet level.

3. The old Golden Hole quartz claim is again idle, work having been carried on for several months, but nothing found to pay expenses.

4. T. Mason and party's claim on the Golden Hole Reef, idle.

5. The Marquis of Lorne Co.'s reef, on the Peel River Land and Mineral Co.'s estate, still working. The proprietors object to give any information about their claim, it being on private property.

6. *Nundle.*—The Lady Emma quartz reef worked a few months; a little gold obtained by hand-washing, but nothing to pay.

7. The old Moonlight quartz reef worked a short time, raised 10 tons of stone, which yielded 4 dwts. to the ton.

8. T. Bakewell and party's old claim on the Brown Snake reef stoped out some 100 tons of quartz, which yielded 1 ounce to the ton; there are two shafts on this claim 160 feet deep each.

9. Claim on Brown Snake reef, north of Bakewell and party, shaft down 100 feet, idle.

10. All other claims on Brown Snake reef have been idle the whole year.

11. G. Cairns and Joseph Clarke's quartz claim, on the Black Snake line of reef, crushed 13 tons of stone, which yielded 4 ozs. of gold to the ton after taking out some 216 ounces of gold by hand washing. They have four tunnels in this claim, one 100 feet, two 120 feet each, and one 70 feet. The gold is principally in patches in this reef.

12. C. B. Anderson, Jas. Cairns and party's claim, south of Cairns and Clarke's claim, have crushed 110 tons of stone, which yielded one ounce and three-quarters to the ton (1¾ oz.). There are three shafts down on this claim, one 100 feet, two 50 feet each, with a great deal of stoping done.

13. Next claim south, Messrs. Prisk, Stringer, and party, on same line of reef, crushed 16 tons of stone, which yielded 1 oz. 18 dwts. to the ton; they have a level into this claim cutting the reef about 50 feet from the surface.

14. Next claim south, R. Morris and party, crushed 56 tons of quartz, which yielded 1 oz. 10 dwts. of gold to the ton; they have a tunnel in this claim 150 feet, cutting the reef about 60 feet from the surface; they have two shafts down 60 feet each, and a monkey shaft 17 feet below the level of the tunnel.

15. Messrs. Bakewell, Northmore, Lord and party's claim, on the Christmas quartz reef, which was found about twelve months ago, have two tunnels into the hill, one 150 feet and one 130 feet. They have crushed 150 tons of quartz, which yielded 3 ozs. gold per ton. This is a north and south reef dipping to the east, although when found, and for the first 20 feet it appeared to be an east and west vein dipping north. The owners are now starting to erect a steam-engine and battery on the claim.

16. T. Bakewell's claim, No. 1 North, on the Christmas reef, has a tunnel in 25 feet. Cut the reef showing gold.

17. R. Albewry and party's quartz claim, north of the Brown Snake reef, idle all the year.

18. T. Bakewell and Rd. Northmore's claim on the Lunatic quartz reef, north-east of the Brown Snake Reef, have 10 tons of stone to the surface, waiting for water to crush; the stone shows a little gold.

19. Messrs. C. B. Anderson and party's claim, on the Lady Mary quartz reef, has a shaft down 25 feet on the reef. This is a north and south vein dipping east, showing a little gold.

20. Mr. C. Brayshaw's quartz claim on the Hanging Rock crushed 40 tons, which yielded 1 oz. to the ton.

21. Messrs. J. Wright and Taylor's claim, near the top of the Hanging Rock, crushed 5 tons of quartz, which yielded 1 dwt. 8 grs. to the ton; they have a shaft down 70 feet. This reef is full of pyrites, and requires some extra machinery to save the gold.

22. Messrs. Wm. Henry, Joseph Ruzickor, and party's quartz claim, on the Hanging Rock, have about 2 tons of quartz on the surface. This is an east and west vein dipping north; they have a level into the hill about 60 feet, and a shaft about 30 feet, deepest workings being about 30 feet, the vein varies in size from ½ an inch to 4 inches. The proprietors are well satisfied with their earnings for the last four months.

23. Mr. A. C. Thompson's quartz claim on the Hanging Rock, east of W. Henry and party's claim, prospecting without success as yet; he has several open cuttings into the reef about 20 feet deep.

24. Mr. G. Bond's quartz claim, Quackannacca Creek, crushed 50 tons of quartz, which yielded 12 dwts. of gold per ton. Mr. Bond also crushed 10 tons of quartz from a reef on Opossum Spur, Hanging Rock, which yielded 7 dwts. to the ton.

25. Mr. John Stanning's quartz claim in the Gap at Quackannacca, near Foley's Folly, has a tunnel in 850 feet on the reef, at a depth of 150 feet, one shaft down 150 feet, and a winze shaft down 50 feet below tunnel level, and a drive from winze shaft 60 feet. This is a north and south vein underlaying to the west, thickness from 3 to 6 inches. He has about 60 tons of stone raised; crushed 25 tons, which yielded 17 ozs. of gold in all. Mr. Stanning has done a great deal of work in this claim without much returns, but he has lately met with a shoot of quartz that shows gold very well. He has not been able to get any water to crush with for the last seven months. When we have a good fall of rain he intends to put on a number of hands to raise quartz and open up the mine at a greater depth.

26. The Wheal Prosper Company's claims, on the old Foley's Folly claims, raised 40 tons of quartz, which yielded 18 dwts. of gold per ton. There has not been a great deal of work done on this mine during this year.

27. Messrs. H. Edwards, Wilson, and party's claim, at the head of Spring Creek, crushed 12 tons of quartz, which yielded 8 dwts. of gold to the ton. They have three shafts on this claim, one 20 feet, one 35 feet, and the other 36 feet deep, with a drive 40 feet along the reef; this reef is bearing north and south, dipping to the east.

28. A number of other reefs have been prospected in this division, a little gold obtained, but not sufficient to pay. Many of them I have no doubt would pay if prospected to greater depth.

29. Alluvial claims at Bowling Alley Point.—There are a few parties of Chinese working along the river bed, and on the Company's estate. Very few Europeans fossicking here for alluvial gold—most of them are working in the reefs.

30. Nundle, Happy Valley, and Oakenville Creek, alluvial claims.—Ah Sam Lowing's claim, at the foot of Oakenville Creek, still working; twelve men constantly employed; they make wages.

31. S. Walker and Conrad Schroder's claim in Happy Valley, driving a tail race, which is now driven some 800 feet; get a little gold but not wages.

32. There are a few Chinese parties in Oakenville and Happy Valley Creeks, some of them making wages when there is sufficient water to work with.

Alluvial claims on cement lead at Mount Pleasant.

33. Messrs. Jas. Henderson, Wm. Henderson, J. W. Bowe, and party, are still working away; they have a tunnel in 900 feet, the deepest part from the surface about 140 feet. They have blocked out 300 feet near the centre of the tunnel; they have taken out about 3000 loads, of dirt, which yielded 3 dwts. of gold to the load. They have two shafts down for the purpose of getting air into the mine. This Company has a water-wheel and battery, 4 stamp-heads, which is kept going as regularly as water can be obtained. Mr. Henderson informs me that if the supply of water was sufficient he could give forty or fifty men regular employment; whereas at the present time, and for the last nine months, the water has been very scarce, causing a great deal of time to be lost.

34. Next cement claim south, Allbewry and party, have lately driven a tunnel into the cement 400 feet, now coming on the wash showing gold. This party are now stuck fast, waiting for water to wash; cannot prove the ground without water.

35. Next cement claim south, Messrs. M. H. Coates, Wilson, and party, have a tunnel into the cement 500 feet with two cross drives, one 106 and the other 112 feet, deepest part from the surface being about 130 feet. This party have box-sluiced 900 loads of wash during the year, which yielded 140 ozs. of gold; five men constantly at work.

36. Next claim south, C. Johnson and Sons, have a tunnel in on the cement 350 feet, without meeting anything to pay, and another drive in 400 feet on a little gold, but not payable as yet.

37. Next claim south, John Rackham's, has a tunnel into the cement 500 feet, washed through sluice race, about 500 loads, which yielded 37 ozs. 10 dwts. of gold in all. The deepest part of this claim from surface about 140 feet.

38. Next claim south, Messrs. J. Odgers, M'Ewan, and party, have a tunnel into the hill 150 feet, get a little gold, but not wages.

39. Next claim on cement lead, about 1½ mile south of J. Rackham's. G. Borelles has been driving a tunnel for the last four or five months; this tunnel is in the cement about 100 feet; not met with the precious metal as yet.

40. Messrs. Howarth and party's claim on cement, at the head of Nundle Creek, a great deal of prospecting being done, but not sufficient gold found as yet to entice more miners to further prospect.

Alluvial claims, Hanging Rock.

41. Messrs. J. Robson and party, head of Danger's Gully, have a tunnel into the hill 600 feet, met the cement with a little gold, but not payable; the miners expect to havesome hard driving for 200 feet further before they will reach the main lead. Messrs. A. C. Thompson, Wm. Thompson, and party have a tunnel into the hill close to Robson, and party; this tunnel is in 430 feet, they have two shafts down, but have not met with anything as yet; these shafts are down about 100 feet each.

42. There are but a few parties of European and Chinese miners fossicking in this locality, nothing extra being obtained.

43. The estimated number of European and Chinese miners on this field is as follows:—

European alluvial miners	84
Do. quartz „	93
Chinese alluvial „	66
And about 30 European and Chinese miners on the Peel River Company's Estate, who do not hold Government rights	30
Total ...	273

44. As near as I can possibly ascertain, the quantity of gold obtained from quartz reefs

in this division is	1,516 ozs.	4 dwts.
which I have an account of, and I would venture to say that there must be about 1,000 ozs. that I have not received any account of, only by rumour	1,000 „	0 „
The quantity of alluvial gold	1,203 „	19 „
Making a total of... ...	3,720 ozs.	3 dwts.

Value, at £3 13s. 9d. per oz., £13,718 1s.

45. The estimated value of all the machinery used on this field in gold-mining, £4,100.

46. I may mention from my own knowledge of this field, that if there were a proper supply of water brought to bear on the western slopes, from the eastern side of the range, where it is plentiful, there would be a much greater quantity of gold obtained. I believe that if the Government or some capitalist would assist, there could be at a very small cost a constant supply of water brought to the highest parts of this field, which would in a very short time I believe pay for itself twofold, also give more than double the quantity of miners regular employment.

PEEL AND URALLA DISTRICT—BARRABA DIVISION.

(*J. Flanagan, Mining Registrar.*)

GOLD-MINING in this division during the past year was almost at a standstill, owing in a great measure to the want of water. Between twenty-five and forty-five men were engaged in the alluvial workings at Tea-tree Creek, Woods' Reef, and Paling Yards, earning, according to their own statements, about 30s. per week each. In quartz-reefing there were about 70 or 80 tons raised, which yielded ½ oz. per ton. At Tea-tree Creek a new Company is just started, and is now engaged puting up a new machine and raising quartz from the old Shamrock reef. In my next report I hope I will be able to give a more satisfactory account of this division.

PEEL AND URALLA DISTRICT—BINGERA DIVISION.

(*M. Doyle, Mining Registrar.*)

I HAVE the honor to state that alluvial mining has been carried on during the past year more successfully than for many previous years. 1,680 ozs. of alluvial gold has been won; the number of miners actually engaged at mining never exceeded seventy or eighty, although 138 miners' rights have been issued; four gold-mining leases have been applied for during the year, and one mineral lease. The principal portion of the gold won in this division has been by a party of eight men, working a wet alluvial lead at Upper Bingera; their average earnings for the twelve months have been £15 per man per week. There is every reason to believe that there will be more gold won during 1881 than the previous year, as several parties are only waiting for their leases to be granted to commence operations. There has not been much done in quartz-mining, a few parties only being engaged in working them.

PEEL AND URALLA DISTRICT—SCONE DIVISION.

(*J. T. Wilshire, Mining Registrar.*)

I HAVE the honor to report, in connection with the gold-fields in this district for the past year:—

1. That there were but few miners at work in a regular manner until the month of September, about which time a small Company among the working portion was formed to work the ground formerly carried on by the (Denison) Fuller's Reef Gold-mining Co., and which was taken up by a party of seven in two leases of 11 and 10 acres each for quartz-mining purposes. The following was the quantity of quartz crushed and yield obtained by Williams and party referred to—viz., from Fuller's reef, 335 tons, 331 ozs. of gold; value of the gold, £1,126 sterling. From other reefs by individual miners, and parties of two men, thus—

	tons	ozs.
Simpson's reef...	20	12
Campbell's reef	7	4
Early Rose reef	12	8
Johnstone's reef	5	18

the values of which I have not been able to obtain, as they were forwarded by the parties themselves in various ways.

2. There are no alluvial workings being carried on in the district, as far as I can ascertain.

3. The number of miners on the gold-field does not exceed twenty-four, while forty-two miners' rights were issued.

4. The machinery consists of two quartz-crushing batteries, before referred to in my former reports, both of water-power, 10 and 8-horse respectively, the latter not at present working.

PEEL AND URALLA DISTRICT—TINGHA DIVISION.

(*T. Jones, Mining Registrar.*)

IN chronicling the marked progress made throughout this tin-field during the last year, it affords me unfeigned satisfaction to be enabled to record that a decided reaction has been observable in every part of the division. In support thereof I have the honor to announce that, as shown by returns, the European mining population has considerably increased, that the number of mineral licenses issued by me exceeds that of any previous year since my appointment to office in 1876, and that the area of stanniferous tracts of land applied for under mineral lease regulations, numbering 4,888 acres, indicates a more vigorous and legitimate system of mining, and is fast superseding the tactics adopted by bubble Companies in the bygone years of the mining mania in 1872 and subsequent years. Further, the local yield of tin ore won, viz., 1,682 tons, representing in value £70,644, is an additional proof of the stability of the field, and also corroborative of the practical and healthy energy displayed in searching for our apparent inexhaustible stanniferous deposits.

Through failing to receive the usual printed forms filled up from many of the claimholders, the compiling of this report has been necessarily retarded, and I fear that it will be found curtailed of many important details; however, from personal inspection and my knowledge of the district I am in a position to assert that the permanence of the field has been undoubtedly established by the opening up of mineral leads in the back ground, which enterprise has been encouraged and accelerated through the impetus given by the healthy tone of the Home metal market. Tin ore has commanded during the past year an average price of £42 per ton locally. This has been the secret of our prosperity, as it induced many to prospect the back ground, consisting of basaltic hills and flats, where several rich claims have been discovered, varying in depth from 40 to 80 feet. I may here remark I have studiously avoided making any marked allusion to the richness or capability of various claims, inasmuch as the claimholders appear to have an objection to such a course, and are very reticent themselves on such matters. Several claims during the past year have exchanged ownerships, and I am informed others are under offer for sale. A number of blocks have been taken up during the expired year for speculative purposes, and in many cases the interests in the applications pending were transferred, totally disregarding the provision of obtaining the license, sanction, and authority of the Secretary for Mines; thus transfer fees and duty stamps, as provided by law, have been both ignored and dispensed with.

A number of farmers, owing to the local depression in agricultural pursuits, have recently devoted their attention to mining, and their endeavours, in many cases, have been fraught with success; thus in a great measure the prosperity of the tin-field has proved the salvation of the entire district.

My present rough approximation of the European mining population affords a striking contrast to my last return, it being then 200 only, and I have much pleasure in confidently predicting a considerable increase in both our European and Chinese population ere the expiration of 1881, provided the value of tin ore does not recede below £40 per ton locally (present rates are £46 per ton).

I am reliably informed our Tingha telegraph office affords most satisfactory returns, and an extension of the line is promised to Stannifer, another rising township distant some 6 miles northerly from Tingha, which at the present time ominously threatens to outvie Tingha.

Stannifer.—At this township, which has sprung up during the past year, three substantially built hotels are erected, also two large stores and other minor ones; also, a spacious, well-built schoolroom. The erection of buildings is rapidly extending towards Middle Creek, where two hotels and two stores are in course of erection. I make mention of these facts in reference to this populous mining centre to further confirm the undeniable stability of the field. I would urge we have unlimited scope for the services of our valued Government geologist in the field. The geological survey of this vast field would be the means of saving much disappointment and sore distress to those practically unacquainted with the science of mineralogy. The development of the field under reliable geological supervision, which is eagerly sought for, appears to me as great an essentiality as the much needed railway communication to our field; it would advance the speedy opening up of our mineral wealth, and be a time-saving boon to all, thereby giving encouragement and an impetus to railway construction, causing an increased mining population, and probably be the means of introducing a class of skilled miners into the districts—a want that at present is much felt—who would relieve the agriculturist and give him a heart to follow his own pursuits on the surrounding lands, so eminently qualified by its agricultural adaptability to become the future granary of New England.

Returns.—The following statistics, which have been carefully sought and obtained with a view to accuracy, will exemplify the general prosperity of the district:—Population, European miners, 800 (or more); Chinese miners, 700. Total yield of tin ore won for the year 1880, 1,682 tons; local value, £70,644 (seventy thousand six hundred and forty-four pounds); mineral lease applications received at the Warden's office, Tingha, 200; area of land applied for, 4,888 acres; mineral licenses issued, 621; business licenses, 16; miners' rights, 3.

Revenue.—Total amount received for 1881, £1,857 15s. (one thousand eight hundred and fifty-seven pounds fifteen shillings sterling).

Unworked mineral leaseholds.

I again advert to the evil of allowing mineral lessees to hold an inordinate area of land and shirk the observance of the labour conditions contained in their leases; in many parts of this district the labour conditions do not appear to be observed; and I venture to express a hope, in furtherance of the true mining interests of this field, that in future all lessees reported upon will be made aware of any such breach, by being promptly called upon to show cause why their leases should not be cancelled. The monopoly of leased lands for speculative purposes, as I have stated in my previous reports, has in past years greatly impeded the progress of this district, and our future prospects are likely to become imperilled again; therefore, to foster the prosperity and development of the mineral resources of this important district, I deem it incumbent at all times to give *bona fide* miners my untiring co-operation, and I trust to be now instrumental in frustrating monopolising designs by exposing and suppressing apparent abuses.

The mines now at work are scattered over a distance of about 24 miles, extending from north-east to south-west through the district; but without wishing to disparage the claims lying in less fortunate localities, I may mention that the most extensive and valuable claims that I have visited, or know of, appear situated in the county of Gough, parish of Herbert. Probably there is one exception in the claim of Mr. Brickwood; the latter has been prospected to some extent, and is known to be a very valuable property. Mannix and Eddy's, also Eddy and Murray's, situated on Sheep-station Flat, are both very valuable claims, and are now yielding large returns. Messrs. Woods and party have had a handsome return from their valuable but recently discovered property on Middle Creek, and probably it will continue to enrich the lucky owners for some time. I may here add it would be idle of me to name a term of years that these claims are likely to last; they all appear more or less "patchy," sometimes poor, sometimes rich, but it is confidently expected these discoveries will lead to more valuable, permanent, defined leads in deeper ground.

Messrs. Cross and others, Levens, Dougherty, and many others have ground in this vicinity which all promises well. This is the least I can say, but as it requires further developing I prefer not committing myself by making rash statements.

The Union Company has an extensive area of ground under mineral lease, much of which has been worked on tribute, and I presume given satisfactory returns. The same Company and others also have much more land that is not worked, that has been held year after year without any work being done thereon. I therefore beg to state I cannot in this report eulogise the efforts of any Company that has signally eluded the working conditions of their leases year after year, but on the contrary, I take this opportunity of showing my marked discountenance of such baneful practices, and I hope during the present propitious change in the value of tin ore that all mining Companies, of which there are legion in this field, will be coerced to fulfil the labour conditions of their leases, or otherwise suffer the legal and legitimate forfeiture of the same. I take this opportunity of stating that there are hundreds of acres of mineral land in this district tenaciously held by lessees that will not pay fair wages at the tribute rates demanded and enforced. If the lessees were compelled to observe the labour conditions of their leases these lands would fall into the hands of the horny-handed licensees, tin-mining industry would advance, Sydney lessors and tributers would pass away, and renewed vitality would predominate in the field.

Mr. Litchfield's claims at the Long Arm, parish of Mayo, have been re-selected and leased during the past year, and in this remote portion of my division when I last visited it had a 4-horse power engine and fifteen Chinese working. This is likely to prove a very valuable property, and the return thus far is satisfactory.

Messrs. T. W. Moore and G. Humphrey also selected land in this vicinity, and prospected the land for a short time, but the yield not being equal to expenses it was let on tribute to Chinese, but has since been abandoned by them. I hope to be soon able to report that further prospecting has been done.

Messrs. Pape and others have mineral land in this vicinity which I have been unable to inspect; however, the claims are not worthy of any special mention, as in one instance the labour clause only provides for one man to be employed during the first three years, and two the remainder of the term of lease.

The Pine Ridge and Nuggety Gully have been the scene of active mining operations. These localities are very rich with surface indications, the tin ore being of a very high percentage and very coarse; however, as no practical provision has been made for the storing of water in the construction of dams or reservoirs I cannot report favourably of the present prospects in this locality, but during tempestuous seasons a good return can always be obtained for labour employed. Mr. S. W. Moore has 80 acres (four blocks) under mineral lease in this locality which offer every inducement for the employment of labour during, as I before observed, a propitious season; however I regret to say the labour conditions of the four leases do not appear fulfilled, thus prospecting is frustrated for the present and the land locked up. Proceeding from this locality in a north-easterly direction through the parish of Mayo, some very promising basaltic country has been from time to time prospected, but without any very satisfactory results; however, the existence of tin ore in rich patches has been established and a reef discovered containing per ton, 5 grs.; silver, 2 ozs. 18 dwts.; copper, 5·96 per cent.

Cope's Creek.

A number of the claims on this El Dorado of our tin-field have been characterized by their abandonment, notwithstanding they were glowingly reported upon by interested parties in

1879. A few claims, however, hold out and are still being worked, notably so Mr. Litchfield's, also the Union Company's Anchor claim, at which a 12-horse power engine has been at work for a considerable time. A few straggling Chinese parties have also continued operations. Any further report respecting this locality would prove recapitulatory matter alluded to in previous reports, therefore now void of interest.

Machinery.

I know of no increase in machinery since my last return, but the value of mining plants has been considerably increased, consisting of tip-drays, horses, pumps, horse-power machines, and the ordinary mining implements, such as picks, shovels, &c.

Photographed locality maps.

The introduction of locality maps supplied during the past year to this office has afforded much valuable information, and has been the means of greatly facilitating the selection of mineral areas, and proved a most fruitful source of information to prospectors, who have successfully searched for tin ore and converted their prospecting areas into mineral leases.

PEEL AND URALLA DISTRICT—GLEN INNES DIVISION.

(*W. J. Martin, Mining Registrar.*)

I HAVE the honor to submit my report for 1880.

After many years of promise a local Company has at last commenced operations at Starlight Reef, Oakwood, with a view to test its supposed wealth in gold. A tunnel, to extend 200 feet, is being driven into the face of the mountain, and is expected to cut the lode at a depth of 40 feet. Should expectations be realized the lode will be solely worked untroubled by water, as the fall is great from the crest of the mountain into the depths below.

Scattered about the barren ranges and sandy swamps at Oban about thirty miners have been working during the past twelve months, and have obtained about 300 ozs. of gold. Some of these men have been twenty years at this place, and have evidently made their homes there.

At Glen Elgin about fourteen miners have been permanently resident, and from inquiries I believe they make fair wages, but could not ascertain with anything like certainty the production of gold.

Mining at Kookgrabookgra has been abandoned, owing to the unfavourable assay of the stone forwarded to Sydney.

At Hogue's Creek considerable activity has been manifested in consequence of the high price of tin, and ground long since abandoned by early prospectors has been taken up anew and worked with a profit. About seventeen Europeans and fifteen Chinese are at work there, and indications point to the discovery of richer ground at the head of the creek.

Skeleton Creek is being worked solely by Chinese. The tin here is not obtained in great quantities, but as long as the present high price rules, the Chinese are likely to continue working ground which would not pay Europeans. The depth from which the ore is obtained varies from 4 to 20 feet, from which has been won 170 tons by 100 Chinese.

Several parties of Chinese, numbering in all about seventy, are working on the Big Flat and at the head of the Severn. The sinking is from 3 to 12 feet. 81 tons of tin have been won there.

17 acres have been applied for during the year for gold-mining purposes, and 425 acres for mineral purposes.

Seventy-five miners' rights, three business licenses, and 111 mineral licenses have been sold.

PEEL AND URALLA DISTRICT—URALLA DIVISION.

(*E. Marriott, Mining Registrar.*)

IN obedience to instructions, I have the honor to forward herewith my annual report upon the gold-fields in the Uralla division of the Peel and Uralla Mining District, for the year ending 31st December, 1880.

2. The continued dry weather for the past fifteen or eighteen months has, I regret to say, almost entirely prevented the miners in this portion of the district obtaining any returns from their claims.

3. Towards the close of last year I sent circulars to the principal claim-holders in this district, asking for particulars as to quantity of gold won and work done during the past year; and from the replies received thereto, it will be seen that very little gold has been obtained, owing to the great scarcity of water.

4. *The Bullion Gold-mining Company, Rocky River.*—The Secretary to this Company, Mr. J. D. Leece, reports as follows:—"This Company are prospecting, and have sunk a series of shafts across an area extending about ¾ of a mile, sinking and driving. They have an engine, 8-horse power, force-pump, and pipes for 200 feet in depth, with other machinery, though not in use in present shaft. Depth of deepest level, 190 feet." The drive in this shaft is 200 feet in length, still continuing.

5. *The Long Tunnel Gold-mining Company, Rocky River.*—Not having been favoured with a reply to my circular as regards the operations of this Company during the past year, I cannot at present give any particulars as to the progress made. I understand, however, that work has been constantly carried on during the past year. The Secretary to this Company will doubtless report more fully at some future date, and perhaps to you direct.

6. The replies (as under) received from some of the proprietors of the most important claims on the Rocky may be taken as a guide for the whole:—

(1.) Mr. Richard Roberts, Mount Jones, Rocky River, reports:—"The mine is at a standstill owing to the want of water for sluicing. The alluvium (about 2,000 tons raised) is now on the ground awaiting washing; therefore no gold has been won."

(2.) Mr. James Young, Mount Walsh Gully, Rocky River, reports:—"In consequence of the drought during the whole of the year 1880, there was very little gold obtained."

(3.) Mr. John Anderson, Post Office Gully and Mount Walsh Gully, Rocky River, reports:—"I have been unable to sluice during the past fifteen months in consequence of the scarcity of water. I have about 5,000 tons of dirt raised, from which handsome returns are expected. Depth of deepest level, 40 feet."

(4.) Messrs. Parker & Williams, Tolly's Gully, Rocky River, report:—"We are working alluvial, Tolly's Gully, leading from Mount Monopoly to Rocky River. Between 60 and 70 ozs. of gold won, at a value of about £3 16s. 9d. per oz. They obtained about 8 ozs. of gold last year from their sluicing claim, work having been almost at a standstill for want of water. About 3,000 loads of dirt ready for sluicing."

(5.) Mr. J. W. Herbert, near Brown's Gully, west side of Rocky River, reports:—"I have about 2,000 tons of alluvium on the ground awaiting washing. I have been unable to obtain any gold from my claim during the past year, owing to the scarcity of water."

7. The number of miners' rights, &c., issued by me during the year was as follows:—Miners' rights to Europeans, 136; do. to Chinese, 48; total, 184. Business licenses to Europeans, 1; do. to Chinese, 3; total, 4. Issue of miners' rights during year 1879 was as follows:—To Europeans, 130; to Chinese, 48; total, 178.

8. I have ascertained the quantity of gold purchased in Uralla during the year amounts to 820 ozs. 3 dwts. 19 grs.; value, £3,147 10s. 4d., or an average of £3 16s. 9d. per oz., as against 2,030 ozs., of a value of about £7,700, for the previous year.

PEEL AND URALLA DISTRICT—WALCHA DIVISION.

(*W. Love, Mining Registrar.*)

I HAVE the honor to submit my report on the gold-fields within the Walcha division of the Peel and Uralla Mining District for the year 1880.

The usual circular letters soliciting co-operation and assistance in the collection of information for this report were addressed to most of the claimholders in the district, but in one instance only has reply been received.

Glen Morrison.—Several deserted claims were registered on this field by practical miners, but almost immediately abandoned, generally from the want of capital to carry out operations. Messrs. Fryer & Co.'s Old Golden Bar Reef still continues to be worked with fair success. This is the only working claim at Glen Morrison.

Tia.—Messrs. Matheson and M'Intyre's claim at Tia Reef still continues to be worked, with very satisfactory results. The crushing-machine of five stampers erected by these energetic miners on M'Leod's Creek enables the proprietors to crush the stone as soon as raised, instead of carting same to Glen Morrison machine, a distance of 40 miles, as was the case previously. 516 tons of stone were crushed during the year, yielding 307 ozs. 9 dwts. of gold. No other claims have been registered on this field.

Nowendoc.—The mining in this district is, I believe, chiefly confined to prospecting. Two claim registrations only have been applied for, and no gold appears to have been purchased at the Walcha Bank. By reason of miners failing to reply to my circulars I am unable to afford further information regarding Nowendoc field.

The gold purchased by the local Bank during 1880 is as follows:—Glen Morrison, 115 ozs. 2 dwts.; Tia, 307 ozs. 7 dwts. 14 grs.

In no instance has a Chinaman applied for a miner's right, and I am not aware of any Chinese seeking for gold throughout my division.

I have issued during the year—Miners' rights, thirty-one; business licenses, two; mineral licenses, nil.

In consequence of a long and continued severe illness I regret this report has been unavoidably delayed to the present date.

The following report has been kindly furnished by Mr. Edwin H. Becke, of Port Macquarie:—

5 February, 1881.

I HAVE the honor to report for your information, on behalf of the Government of New South Wales, that on the 18th December, 1880, I started from Port Macquarie on a prospecting tour, intending to thoroughly prospect the Upper Hastings, as also the Ellenborough country.

After leaving Port Macquarie I made for Cower, a run or station about 12 miles from the foot of Mount Sea View, and 70 miles from Port Macquarie; but owing to the man (miner) I had with me, when within 3 miles of the locality or spot I wished to prospect refusing to go any further in such rough country, did not reach there, although I explained to him that within 4 miles we would reach a table-land, or comparatively a level country. I have been informed by several of the residents at Kokoamerica, near Mount Sea View, that good gold could be obtained at Cower, some born residents stating that they often wished to try their luck, but did not know even how to wash a dish of mullock. A man of the name of Peter Johnson obtained at this locality 4 ozs. of gold in a few days, but a flood coming, he was compelled to abandon the idea of further prospecting. A Mr. Charles M'Donnell, a gentleman on the Manning, who leases this run, also informed me that one of his sons obtained 2 dwts. from a dish of wash-dirt obtained from the river-bed.

Cower was visited by three miners, some three months ago. I was conversing with them with reference to the locality, and they are of opinion that there exists a payable gold-bearing country, but the difficulty to contend against is the continuous stream of water.

There are some well-defined reefs at Cower, but not one of them has been opened out. I am of opinion that it would be worth while deep-sinking for alluvial at this place.

Tobin's Creek.—This is one of the main tributaries of the Hastings, and has a force of water even stronger than the Hastings proper; it takes its rise on the main range, about 77 miles from Port Macquarie, and, on the line of road Port Macquarie to Walcha, gold can be traced from its mouth, where it falls into the Hastings, up to a distance of nearly 10 miles, being then within 1½ mile from the road mentioned above. I have been informed by two miners, Kenneth Mathieson and John Neelson, that they obtained as much as 2 to 7 dwts. per day each at this place, and state that only on account of the water (springs) they could do well; the difficulty these men had to procure provisions preventing them from working more energetically. They have both since left for Tia, Mathieson intending to return in February. (I received a letter to-day stating he was again going to try his luck, having arrived at Tobin's last Tuesday, the 31st January.)

Tobin's Creek abounds in quartz reefs, and, strange to say, not one of these has even had a pick put into them. There are several reefs about 5 miles from Tobin's, at a place called the Cells, with veins of plumbago running alongside of them. These veins are charged with pyrites, such veins being composed as above, with rotten quartz. I am also informed that at Cowell Creek there is a very heavy deposit of the above mineral.

The Cells.—This locality is about 5 or 6 miles from Tobin's, on the main road Port Macquarie to Walcha, and gold can be got or procured in nearly all the gullies; both Tobin's Creek and the Cells being heavy scrub country.

From the Cells I continued my journey to Tia Station, to have a look at the Tia reef, about 3½ miles from the main station.

Tia Reef.—This reef is, in my opinion, one of the finest and most easily worked reefs in the New England District, and I am astonished that so little is known of it, and cannot congratulate the business men of Walcha for not showing more pluck in making the reef known. I may state that the prospecting claim is being worked by Mathieson and M'Intyre, two Scotchmen who, since August, 1868, have put in a tunnel 300 feet, proving it to 100 feet by a vertical shaft. The reef was cut in the tunnel named. The tunnel was principally put in to drain the hill of water, as this was the only difficulty in working the reef. The hill is now free of water on the line of reef. I may state that when the reef was first discovered in 1873 there was a rush to the place, claims and leases being pegged for nearly 2 miles; this I could see was the case by the surveyor's pegs. Those who did take up leases and claims were men who knew nothing about mining, whose calling were cockatoos and bullock-drivers, who had but a few pounds, and when that was done they stopped working their lease, thus excluding the practical miner from securing any show. It is plainly to be seen that this is the cause of the reef not being publicly known. I was informed that the reef could not be found either on the north or south of the prospectors; this is wrong, for after going down an old shaft, No. 1 south, and cleaning the rubble away, I found the reef proper, coming in alongside of a (or what they term a) buck or barren reef. It commenced with a leader of 1 inch, 14 feet from the surface, and at 4 feet further sinking it came out to 4 feet, the buck reef dipping the other way, viz., to the west. In reference to this reef, I think it should be made publicly known, for the good of the Colony. The average return from the crushings of stone is, I believe, 1 oz. to the ton. The prospectors have a water-wheel plant of 5-stamper; they have crushed about 600 tons in the last twelve months. The machine is not large enough to crush the body of stone that is taken out; the prospectors could keep a 15-heads of stampers continuously going. I have such a very high opinion of the reef that I have applied for a 4-acre lease on No. 1 South. The reef is 4 to 6 feet wide, or an average of 5 feet, and I consider it a fortune to any one who would work it systematically.

The reef is only 20 miles from Walcha, being on this side of that place—viz., an easterly direction from that town. In giving this lengthy information to your department, I do so thinking that perhaps you may in some way be enabled to draw public attention to the fact of such a reef existing. The country around Tia has not been prospected, but alluvial can be procured in the Tia River, as also in the gullies falling into the river. Pieces of quartz containing gold have been found in the gullies (several).

The Ellenborough.—I paid a flying visit to this locality, and could procure gold from the mouth of the river, running it up nearly ·15 miles. I intend to take another trip to this place. Manganese in large quantities abounds in the locality. I am of opinion that a good alluvial country (gold) could be opened out on the table-land of the Upper Ellenborough; no attempt has been made to even put down a shaft.

NEW ENGLAND AND CLARENCE DISTRICT.

(Mr. Warden Graham, P.M., Tenterfield.)

I DO myself the honor to submit my annual report on the mining district under my charge for the year 1880.

Boorook.—During the year Messrs. Horton and party have raised and treated a large quantity of chloride silver ores, from which the yield has been good. The Golden Age mine has now been prospected to a depth of 140 feet, in two shafts, one on the north and the other on the south of the lease. Only the chloride ores have been treated in this mine, and as they have now run out, work is almost suspended until the sulphide ores can be successfully treated. Little or no alteration has been made in the machinery used or the treatment of the ores during the year. The process is to crush the stone and pass it through Wheeler's pans; this treatment, although successful in chloride ores, will not extract the silver from the sulphides. The Golden Age reef carried chloride ores from the surface to the 70-feet level, and then suddenly changed into blue sulphide ore. The chlorides are now worked out. The extent of the reef worked is 260 feet along the reef, by an average depth of about 65 feet, the yield from which has been over 50,000 ozs. of silver; the tailings are now being treated, from which the yield is very satisfactory—it averages about 16 ozs. to the ton. Experiments are now being made with the sulphide ores, and a parcel of 4 tons of the ore has been sent to England to test the market there.

There is no doubt but that the sulphide ores are very rich, and that they increase in richness as they get deeper. From below the 70-feet level the reef averages about 30 inches wide, and at the 140-feet level is a well defined reef. Assays have been made of ore from various depths. The following were carefully made by Mr. Davy, of Boorook, and can be relied on as correct.

		Depth.	Result.
No. 1.	Argentiferous blend	125 feet.	300 ozs. to the ton.
No. 2.	Do. do. and pyrites ...	130 „	350 „
No. 3.	Do. do.	135 „	420 „
No. 4.	Do. do.	140 „	700 „
No. 5.	Argentiferous pyrites and shale...	140 „	170 „

No. 5 is a fair average of the whole of the lode at the 140-feet level.

Awaiting the result of experiments and the shipment of ore to England, the mine has been registered for suspension of work. The machinery is still at work treating tailings, from which a large quantity of silver is obtained at a small outlay.

The adjoining leases, No. 1 North and No. 1 South, are also registered for the same reason as the Golden Age. The chlorides in these leases were not payable, but from assays the sulphides are rich. If the sale of the ore in England is satisfactory it will give a great impetus to silver-mining at Boorook, as it will do away with the necessity of erecting costly heating appliances. The result is expected to be known in a few weeks.

Messrs. Hall and party are working the Nil Desperandum Reef, situated about ¾ of a mile south-westerly from the Golden Age. The reef is very large, it is over 6 feet wide, and well defined. The stone yields well; on my last visit the average was 1 oz. gold and 2 ozs. silver to the ton. The machinery employed is a 15-stamper battery (at present only working 8 stampers), and two Denny's pans.

Dennis and party have a very good little plant, consisting of three head of stampers and two Wheeler's pans.

The Woolshed and Alderman reefs, situated about 1½ mile north-west from the Golden Age, appear to be rich. On the Messrs. Johnston's Woolshed reef there is a shaft down 40 feet and a drive of 45 feet; a trial crushing of the stone (8 tons) was made at Dennis's machine; the yield was 18 ozs. of metal to the ton; the value has not yet been ascertained, but it is supposed to contain a percentage of gold equal to 1 oz. to the ton of ore, the remainder silver; another lot of 1½ ton from the same reef yielded 40 ozs. to the ton. There is every prospect of this mine being worked by a public Company—the proprietors are now floating it.

At Lunatic and Perseverance very little has been done since my last report; the yield of the mines working is payable, and in some cases good.

At Tooloom very little has been done during the last year; a fresh find has been made lately, and the prospectors are very sanguine.

At Solferino, Lionsville, and Cangi, very little mining has been done. Lately some attention has been directed to the old workings, and several parties are now putting in drives and prospecting. Some of these reefs have been very rich in patches. If the present prospectors are successful, there is no doubt but that reefing must take a fresh start. The alluvial miners are doing very little—the want of sufficient water during the year has seriously interfered with them. At Cangi a party is working on the Sir Walter Scott reef—I have not heard with what result.

At Dalmorton mining has slightly revived.

At Boonoo Boonoo a good party of practical miners are bringing up a tail race, to drain a large swamp called Dismal Swamp. From prospects obtained they are convinced that there is a good deposit of gold in the bottom. The race is cut through bars of granite, and is a work of some magnitude. There are many auriferous swamps in this locality, bar-bound in the same way, which will no doubt be tried if the present venture prove successful. There are a few miners on alluvial in Boonoo Boonoo Creek.

The Timbarra gold-field still yields alluvial gold. The auriferous country extends over a large area of granite formation; nearly all the creeks are more or less auriferous.

At Poverty Point, although constant work has been carried on in the big tunnel during the year, it is not yet through; when completed it will be about ¾ of a mile long. The rock is very hard, and there is yet some 2 or 3 chains to do. The work is being done by a Company, called the Surface Hill Mining Company.

The Company hold about 20 acres of land, which is intersected with numerous dykes of soft granite containing payable gold. The hard granite also contains gold, but it would probably not pay to crush. The soft granite can be cut away with hydraulic sluicing. The supply of auriferous granite is almost unlimited—the whole mountain is of similar formation. The water will be collected by races which are already cut, extending about 7 miles, cutting the heads of various creeks; it will be brought through the tunnel and by about 1½ mile of fluming, to the mine, where it will have a fall of 50 feet, which will give quite sufficient pressure to hydraulic sluice the soft granite. The Company have expended a large amount of money on the works, especially on the tunnel, which is for this district a gigantic undertaking. It is to be hoped their enterprise will meet with its reward. Some ground sluicing has been done on the claim during the year, showing payable results.

The ultimate success of silver and gold mining in this district will depend greatly on the result of the treatment or disposal of sulphide silver ores, the successful working of the surface Hill Company at Poverty Point, and the opening up of the large bar-bound swamps at Boonoo Boonoo.

Tin.

Tin-mining is steadily holding its own, and would certainly have improved, with the present price of tin, but for the long protracted drought. There are 108 European and 350 Chinese miners on the Maryland Tin Mines. The yield for the year was 677 tons, value on the ground between £3,000 and £4,000. If tin holds at its present price and sufficient water is available for sluicing, I expect a much larger yield for this year, 1881.

NEW ENGLAND AND CLARENCE DISTRICT—VEGETABLE CREEK DIVISION.

(*G. H. Gower, Mining Registrar.*)

I HAVE the honor to furnish my report on the Vegetable Creek Tin-mining District for the year 1880.

The yield of tin shows a considerable improvement upon that of 1879; the returns have been kept up mainly from the deep leads, fully showing from where the increased yield is coming, that the leads are far from exhausted, and on the contrary, this tin-field would appear to be in its infancy, and only now developing its vast resources. The great event of the year has been the striking of remarkably rich washdirt in Fitzgerald's C.P. block of 40 acres at Rose Valley, near Vegetable Creek, by Messrs. Fox and party, who are working the land on tribute.

The sinking is 80 feet deep, through 60 feet of soft grey basalt and 20 feet of various coloured layers of pipeclay, and there are fully 2 feet to 8½ feet of excellent tin-bearing washdirt. The tributers have proved the width of the lead as 100 feet, and have driven 300 feet along the run of the lead, with no signs of any diminution of the thickness of wash. The wash is rather gravelly in character, with a few claystones, and very rich. Messrs. Fox and party have raised 553½ tons of tin during the past nine months. The average weekly yield from this mine is 22 tons weekly, with thirty men and boys. Six horses and two carts employed. Each of the six tributers for nine months' work, after paying all expenses, had received in dividends £2,500 cash.

Another party of tributers, in prospecting a piece of ground adjoining Fox's tribute, were fortunate enough to bottom on the supposed continuation of the lead at 60 feet on very good wash. The sinking about this locality is remarkably easy, being soft grey basalt and pipeclay. The tributers, Messrs. Conlon and party, are in the receipt of a steady uniform yield of 10 tons of tin weekly, with fifty men on wages, independent of very rich patches which they frequently meet with in the development of the lead, along which they have driven 200 feet, and proved the width at about 100 feet, containing 18 inches to 2 feet of wash. The undisturbed portion in the face exhibits very good tin, and according to all appearances will be productive of a similar result.

The greatest perseverance has been manifested by Messrs. Procter and party, another party of tributers, adjoining westerly to Conlon and party, who have for the past eighteen months been prospecting the southern portion of Jno. Lennon's C.P. block No. 20, and I am glad to report that their efforts have last month been most handsomely rewarded in striking a run of washdirt 25 feet wide, containing 2 feet of really rich wash. The sinking here is only 26 feet, and is also through soft basalt. As this discovery is only lately made, too little work has been done to judge of the value of it, nevertheless a promising future appears to be in store for the tributers.

On the northern portion of the same C.P. block, Messrs. Partridge and party have been steadily working the deposit discovered by them last year at a depth of 50 feet. The washdirt averages a depth of 18 inches; a width of 70 feet, and about 350 feet in length has been worked out, yielding 186¾ tons of tin, with thirty-five men and boys and two horses and carts employed. This party of four tributers have received £950 each in dividends since starting operations twelve months ago.

Eventually I have but little doubt that the four tribute parties above mentioned will prove that they are working on the same lead, as the character of the washdirt and sample of tin are exactly similar. This wash requires puddling, for which purpose each of the parties have erected puddling machines in connection with their sluicing appliances.

The Wesley Brothers have disposed of their property to a Sydney firm of capitalists, who have succeeded in floating it for £40,000. The price paid for the mine is sufficient evidence that it is wonderfully rich in tin. The explorations carried on by Messrs. Wesley before selling proved the width of the lead to be 170 feet, and up to the present workings have been extended 340 feet along the run of it. The wash is very rich, being in some portions of the faces quite black with stream tin; but being composed of gravel and very fine dry sand, every foot worked has to be carefully close-lathed in the sides and roof of the drives with double sets of timber. To give an idea of the amount paid by this Company for timber alone for the underground workings, I may mention it cost over £80 in the month of December last. The yield from this mine would have been very much larger than what it is, viz., 286 tons of tin for the year, if it had not been for the want of water during the earlier portion of that period, and also the only work that was done was purely of an exploratory nature by the prospectors, who had not quite securely timbered all their workings, which necessitated the suspension of sluicing operations for some weeks till that was effected. The new Company has however raised 100 tons of tin, and at the same time, under the able management of an experienced miner, has introduced a more systematic way of working the mine. The faces show large and rich bodies of washdirt in some places, so that I anticipate the yield of ore from this mine during the current year will be excellent. Fifty-six men are at present employed on wages, which number will be increased shortly. The Company have a 10-horse power steam-engine being fixed at a large dam excavated about ¼ of a mile from the workings, by which water will be pumped and flumed to the sluice-boxes at the mouth of the whim shaft. On the surface all appliances for sluicing are in capital order. The washdirt, being a regular river-bed gravel and drift and quite free, does not require puddling.

A portion of this property, and distant about ¼ of a mile from the Company's shaft, has been let on tribute to Messrs. Flannery and party, who have during the year bottomed a shaft at a depth of 210 feet, on the supposed continuation of Wesley's lead, on good tin-bearing drift, 3 feet thick, on breaking into which the workmen were driven out by a volume of water. The party erected whips and whims in the hopes of beating it, but found that only steam power was strong enough to cope with the water. An 8-horse steam-engine with winding gear is now erected, and is so placed in reference to the shafts, that while pulling up washdirt from one shaft the barrel for baling out water is lowered down the adjoining shaft, in which is a wellhole 20 feet deep, thus it keeps continually working both shafts at the same time. This party of tributers were for six weeks constantly baling out water night and morning, preventing them from doing any other work, and they have now beaten the heavy vein of water which has been a constant source of annoyance and expense for the last four months. A new feature in working our deep tin leads has been introduced by these miners. The drift and wash carrying tin in this claim being wet, the main drive and cross ones have to be secured by sawn timber and laths as tight as a box. Only experienced men are employed at this work, as by a slight error the whole of the drives may be lost, by allowing the wet sand and drift to run. The drives have been extended 200 feet along the lead, and 70 feet wide. Blocking out has not yet been started, but the party have been raising a large quantity of rich dirt, and they have a very prospect of a very good washing immediately the dam is excavated close to the shaft, which will be filled from the baling shaft, and all the sluicing appliances now being erected are completed.

The Vegetable Creek Tin-mining Company (Limited) have let several small portions of their land on tribute. Twenty-one parties of tributers are at work, of whom five have struck payable deposits of wash in deep leads, some prospecting in deep leads and some are working surfacing. The Company's property at Graveyard Creek is proving to be more valuable than was anticipated twelve months ago. So many parties of tributers have been prospecting here during that period that apparently three distinct veins or leads of wash have been discovered in shafts varying in depths from 50 to 140 feet. The washdirt averages in depth from 2 to 4 feet throughout, and is payable. The veins of wash found here have not yet been developed, and will eventually, no doubt, be found to be a succession of gutters and small waterholes. At the Company's property, Rose Valley, two parties of tributers are at work ; the depth of sinking is about 55 feet, the payable washdirt averages 2 feet in depth, and is from 12 to 40 feet wide. The lead of wash is very serpentine, and about 400 feet in length is worked out. The tributers on this lead have some difficulties to encounter, as the pipeclay roof, or many portions of it, is wet, and the drives have to be worked with double sets of timber and laths. The yield from this Company's property during 1880 was 384¾ tons of tin.

At Messrs. Cadell and Mitchell's Y Waterholes Mine I have nothing new to report, except it is now being opened out by tributers, who have raised some rich-looking washdirt, and intend to commence washing early next month.

In my previous report I mentioned that Messrs. Griffiths & Co. were sinking a shaft through the second layer of basalt occurring in the bottom of their rich lead at Rose Valley, in the property of Messrs. Irby & Co., at a depth of 60 feet from surface. A shaft was sunk a further depth of 40 feet, striking a vein of wash carrying tin. It was composed of nothing but large soft granite boulders and a clayey wash 1 foot thick. This they followed for some distance, but the gutter was only about 16 feet wide, and paying the workmen's wages. The prospects obtained so far as the ground had been opened up did not appear to be particularly encouraging, and after a time the workings were abandoned. Within the past two months another attempt has been commenced to prove the ground, but up to the present date nothing worthy of notice has been discovered.

Mining affairs at the Two-mile are very dull. The sinking is attended with great difficulty, owing to water and excessive hard rock met with. Messrs. Skinner and party and Scott and party have sunk about half-a-dozen shafts during the year, several of which were through hard basalt, and the deepest about 90 feet. In the aggregate these two parties have sunk and driven about 1,200 feet, and I regret to say have not as yet succeeded in finding anything payable. They have started sinking closer to Rose Valley, and it is to be hoped they will meet with better success in the ground they have now chosen.

Messrs. Wetherdin and party bottomed at 70 feet through hard basalt, 2 miles west of Rose Valley, upon pretty fair show of tin in the drift. They were unable to test the ground or find out what quantity of wash there was, on account of influx of water and of their shaft showing signs of caving in, and they had to give their attention to slabbing the drift. They have since given up the idea of sinking shafts, and, being backed by some residents of the township with the object of further prospecting the hill in which they have been working, a tunnel has been started with the object of draining the water.

Messrs. Ben. Hart, Swyny, and party, becoming convinced of the probable existence of tin some distance beneath the surface of a ridge called the Red Hill, distant about 1½ mile south of Vegetable Creek, on a spur of the same basaltic range on which the rich deep leads are now being worked at Rose Valley above mentioned, determined to thoroughly test the ground, and about five months ago the work was commenced. The undertaking appears to have been conceived and certainly is being carried out in the true spirit of enterprise, and with that amount of perseverance and patience which are absolutely necessary to the proper working of the tin deposits that are still known to exist in this field. The ridge that this party have decided upon testing presents, in the way of tin-mining operations, difficulties which are of no ordinary nature. The principal of these is the necessity to drain the hill of water, which in any shaft sunk to a comparatively shallow depth below the surface, accumulated so largely as to make it all but impossible for men to continue working, and to effect the required drainage it was determined to drive a tunnel into the side of the hill. The labour of driving the tunnel from the first has been very great, and so far as the tunnel has been driven, about 450 feet, was through solid granite, which had to be removed by explosives. The cost of driving per foot (which is let on contract) has been 30s. Expectations that the granite would soon cease, and the labour of tunnelling become easier and less expensive, have as yet been followed by disappointment. Undoubtedly the tunnel is a remarkable piece of work, alike creditable to tin-mining enterprise and deserving of success, and it is to be hoped a new and important discovery may be the result. Hart and party expect to drive about 800 feet before tapping the washdirt supposed to exist in this hill. This venture is in the hands of men who have funds and thoroughly practical knowledge, who know what they are about, and who certainly would not enter upon any undertaking of this sort unless they had good grounds for so doing.

Messrs. Salmon and party, owners of 40 acres mineral conditional purchase on this same ridge, at a depth of 40 feet found a narrow but payable vein of tin washdirt. This party were forced to abandon the ground on account of heavy water, and appliances not being available.

Prospecting parties have been testing the basaltic range 4 miles westward of Vegetable Creek, with very disheartening results. The ground is very much deeper than near the town; the strata also differed, heavy drift encouraging the men in the delusive hope of eventually striking payable dirt. Several deep shafts have recently struck water and have had to be abandoned, the cost of machinery being beyond the reach of individual miners. These shafts are sunk through hard basalt and heavy drift from 80 feet to 240 feet, and have taken from six to eight months to sink. One shaft sunk by Jew and party through basalt at Reynolds' selection, reached a depth of 240 feet; when breaking through the hard rock a layer of drift with indications of tin and containing a large quantity of water completely flooded the shaft. They erected a whim to bale the water, but have since abandoned the land, as they found their appliances quite inadequate to the work required to keep down such a volume of water as they met with.

Prospecting is still being prosecuted with vigorous determination at the Three-mile Creek on the basaltic country 8 miles north-west of Vegetable Creek, and the miners all remain in the hope that their efforts will be successful. The rock is very hard, and requires the use of blasting powder.

Messrs. Fergusson and party, 3 miles north-west of Kangaroo Flat, found a deposit of payable wash at 80 feet deep below the basalt. The wash is gravelly in character, and showing well in tin. They are still raising wash-dirt, and working steadily and contentedly. The result of this party's explorations has been conducive in opening up and attracting attention to an extensive tract of available basaltic country north-westwards.

Messrs. Hopper and party are prospecting 4 miles northerly from Fergusson and party. They have discovered a deposit of coarse gravelly wash only 2 feet from the surface, on the side of a made hill. There are good indications, and every probability of the ground proving payable.

At the Kangaroo Flat Mine (Messrs. Hall Bros., & Co.) I am glad to report that the prospects are brightening. During the year a shaft was bottomed by the Company on a red hill at a depth of 115 feet, 90 of which was hard basalt. A deposit of wash showing excellent prospects of tin was discovered, and 130 feet wide. While putting in the main drive, the workmen came across a log of wood in the face, which was so soft and soaked with water that they were able to chop it with an axe. A piece of this timber I forwarded to the department about three months ago, with a number of rock specimens. A tunnel 300 feet long has been driven in the side of the hill to meet the prospecting shaft, as the management consider that this deposit will be more economically and expeditiously worked by that means, and the best results are anticipated therefrom.

At Rocky Creek, 25 miles north-west of Vegetable Creek, some few parties are giving the basaltic country a fair trial, which it is to be hoped will be productive of a good find. The nature of the sinking in this locality is remarkably easy, and water is by no means scarce. It is believed that some good ground will be opened in the course of time. A shaft was sunk here to a depth of 195 feet, by Morton and party, through soft basalt and drift, until at that depth they were driven out by water and foul air.

At Spring Creek, 6 miles west of Rocky Creek, on the Ashford Road, prospecting has been extensively carried on the past twelve months on what are locally termed the "Red Nobs." One party of prospectors (Messrs. Brown and Hunt) found a deposit of wash with fine prospects of tin, at 25 feet under a basaltic nob, surrounded by high granite ridges, which to all appearances seems to have originally been a water-hole filled up during the volcanic eruption. The wash is composed of water-worn granite boulders, drift, and sand, and is easy to sluice. This party disposed of their 40 acres, held under a mineral lease, to a Company of Inverell residents, for the sum of £2,000. Through the exertions of Mr. Moore, the manager for the Company, the mine has been opened out and put in proper order for working. The manager has kindly supplied me with the following information, which I have extracted from his letter :—"The average depth of washdirt is 4 feet. The sluicing plant consists of two-horse-power pumps and a puddling machine, one plant being fixed near the mouth of the shaft, and the other on the creek, a distance of about ¼ of a mile from the claim. At present the dirt is being carted to the washing plant at the creek, but it is intended to lay down a tramway as soon as possible and convey the washdirt in trucks. The value of the working plant on this mine (Ruby Hill) is about £300. There are twenty-five men and six horses employed, and the quantity of ore raised per week is about 4½ tons, at a cost of £17 per ton, since the Company started operations three months ago."

A good deal of prospecting is being quietly carried on in that locality, but nothing which can be called payable has yet been struck.

The recent discovery of alluvial tin-bearing wash, at a depth of 60 feet under basalt, about 2 miles from Deepwater, on the Wellington Vale Run, and situated 16 miles *easterly* of Vegetable Creek, is attracting a good deal of attention locally, and it is by no means unlikely that it will yet prove of considerable importance to this district. I have not had time to inspect this latest discovery, as it was only reported to me during Christmas week, but it is said that good prospects have been obtained, and this would seem to point to the existence of a lead under the long basaltic range on the eastern boundary of this tin-field, stretching from the head of the Nine-mile Creek southerly to beyond Deepwater. In the event of such a lead being found, there might be sufficient ground opened out to provide employment for hundreds of men. Some good practical men, with funds and rations and tools, have gone out this week, and I think the locality will get a fair trial, and some payable ground I hope will yet be discovered. I do not see the reason to doubt this eventuality, as the prospects obtainable from the wash-dirt raised by Messrs. Dimaio and party at the head of the Nine-mile Creek, on this same basaltic range, at

20 feet sinking, indicate the existence of a payable deposit of wash under this basaltic foundation, and leads me to expect that a considerable quantity of available land will shortly be taken up and worked in that direction. The very limited supply of water has not as yet enabled Dimiao and party to get thoroughly to work.

In such places in this district where the basaltic lava overlies the drifts it is not easy for the miner to trace the vein of rich ground, and where the width of basalt is a mile or two miles it is easily lost. A number of small leases on the supposed course prove unremunerative, vast labour is expended uselessly, and the place is perhaps abandoned; but the lead is surely there, and by co-operation, by making bores across the belt of basalt so as to determine the depth of the bed rock, it would be easy to save unnecessary expenditure of time, labour, and money, and to trace the gutter for miles onwards.

With reference to the shallow alluvial workings in the vicinity of Vegetable Creek, I have no great discoveries to report upon. In many of the claims work is being steadily proceeded with. The whole of the mines situated in the bed of the Vegetable Creek are in the hands of Chinese tributers, of whom about 500 find profitable employment in washing continuously the tailings and patches of unworked ground.

A large proportion of the population on the creek are Chinese; it would, in fact, be difficult for many of the tin mines to be worked with any prospect of profit if the Chinese were not employed. Even the European miners admit this, for the Chinese can make mining profitable when Europeans cannot; and here there is a large extent of ground where tin is obtained which would probably be untouched if Chinamen were not employed to work it. The real reason why the Chinese seem to be able to succeed in mining upon ground that yields a little over £1 per week per man to any other labour employed is to be seen in the long hours they work (from sunrise to sunset), and their constant and persevering industry. In every portion of Vegetable Creek these parties of Chinese tributers can be seen at work; they are generally in gangs of ten men. Some are employed at stripping washdirt, others wheel away wash in barrows to the sluice-boxes, others again attend to the sluicing, and two of them work in two-hour spells a kind of treadmill, which keeps a Californian pump in motion, and supplies the sluice-boxes with the necessary stream of water.

The increase in the number of Chinese employed in tin-mining at Vegetable Creek has been very large this year, but nevertheless if it had not been for the Chinese, who are the principal tributers, mining operations in the creek claims would at one time have been possibly brought to a standstill.

Previous to the employment of Chinese some of the largest of the tin-mines did not pay, and now the proprietors of several, having availed themselves of the opportunity offered by the presence of Chinese on the field, have let the mines to the Chinese on tribute—in many cases first submitting the work to tender, and they are now paying well. It is needless for me to enumerate all the mines employing Chinese tributers, and paying excellently, as all so worked are doing. I may however mention the Great Britain Tin-mining Company and Messrs. Moore and Company, the largest proprietors of tin land on the course of Vegetable Creek proper. The former Company give employment to 220 Chinese, who have succeeded in proving 3½ chains wide and a half-mile in length down the creek bed on that mine, not only payable to themselves at the tribute they are raising the tin for, averaging about £30, but leave a large profit to the Company from 756 tons of tin raised during the year 1880, and ground is daily being opened out and prospected on the Great Britain Mine, which will continue to yield as well and give employment to as large a number of Chinamen for the next two or three years. On Messrs. Moore and Company's property 150 Chinamen are working on tribute, who have raised about 300 tons of tin at £30 per ton during the year.

Sometimes the Chinese purchase land for mining purposes from Europeans. Many of the European miners do nothing but prospect new ground, and if they find a payable spot, they either endeavour to get Chinese to work the ground on tribute or sell it to them. Among the numerous instances that came under my notice, one occurred at Catarrah Creek, Mole Tableland, where a European sold a 4-acre mineral area to a party of Chinamen for £200 cash. It is a recognized belief that ground which will not pay Europeans will pay Chinese; and though this conviction is to some extent erroneous, it appears to suit both classes of miners, and it certainly has the effect of opening out a much larger extent of ground than under other circumstances might be worked, and of making tin-mining in this district much more brisk. This can be seen in the increased quantity of tin ore that has been won during 1880 (3,696 tons 5 cwt.) compared with the returns for 1879 (2,715 tons), and from the fact that the number of acres of mineral land taken up in 1879 was 1,350, while the number applied for in 1880 was 5,734 acres, and all by miners for legitimate mining; and also the revenue of that year received in this office was £2,256 10s., against £472 in the previous year, and 341 mineral licenses were issued in 1880, as compared with eighty-nine in 1879.

Another feature of the advancement of tin-mining at Vegetable Creek is the steady increase in the number of persons engaged therein; for while there were but about 670 Europeans and 360 Chinese miners last year (1879), that number has now been increased to about 950 Europeans and 1,200 Chinese miners.

At the head of the Graveyard Creek mining matters are generally more cheerful and promising. Some new ground has been opened out by Glennie and party, and the miners speak very confidently of future success. At the Y Water-holes Creek a considerable improvement is apparent of late; operations having been started on account of the leases applied for, and in several instances the results are satisfactory, and the aggregate outcome of tin ore for this division augmented. A large number of Chinese are employed here also by Europeans on tribute, who are continuously washing, and seem to be thoroughly satisfied with the returns. Big Ben Creek supports a population of about ten Europeans and as many Chinese miners, who are all steady working men and appear to be making fair wages. Several small parties are engaged in alluvial digging in various parts of the Tent Hill portion of this field, but as yet nothing has been hit upon that would give employment to a great number of Europeans. The temporary desertion of this part of Vegetable Creek District is being duly considered by Chinamen, of whom a large number are now settled down there, but the European population, although meagre, will be able to hold their own.

What is doing in tin-mining at the Glen Creek and the gullies falling into it can only be conjectured by the fact that no one seems to leave these localities; on the contrary, there are more people, which is favourable to the notion that something worth while is being effected.

A number of leases have been taken up at the Nine-mile Creek; and, judging from those which have been working for the last twelve months, this portion of the field may give employment to a number of men at good wages. Several deep ventures are likely to turn out well, but pumping gear will be required, as the ground is very wet.

The alluvial at Scrubby Gully, Mole Tableland, is being worked to advantage, but owing to the want of water they can only stack the dirt. Wyndham's Swamp, Staldwak Creek, is reoccupied by Mr. P. Wright, who intends to erect a small engine on the land to pump the water. The large amount of water met with here is a great drawback to its development, but when this difficulty is surmounted the lessee is confident of being well remunerated.

Several miners have been working in the gullies at the Mole Tableland during the past wet season with good results, but the water is now becoming scarce and they are leaving pending further rains. Catarrh Creek supports about fifty Chinamen, who from appearances are doing well. A small population are fossicking in the gullies about the Gulf; occasionally some of them drop on a patch, and while it lasts they are enabled to make middling good wages. Upon the whole the alluvial diggings in this portion of the district are poor, so far as they have thus far been proved.

So far as tin-mining is concerned, if the Gulf is ever to be great it will be found in the development of the tin lodes, which extend over an area of several miles, upon which (except a very limited area) no work has been done to prove them.

All they require is the means to try them, and so far as the primitive efforts of a few enterprising men have gone, good results have been achieved; and until capital is introduced and batteries erected, I fear I shall have little of an encouraging nature to report on at the Gulf. But outside these encouraging facts connected with the alluvial tin-mining at Vegetable Creek, there are some equally gratifying from the tin lodes. During the year there are indications that attention is likely to be directed to the development of our tin lodes.

340 acres of lode tin land at the head of the Nine-mile Creek, Wellington Vale Run, were applied for under mineral leases by a party of Sydney speculators, whose intention I understand is to start operations at once in opening out the lode. It has a strong surface outcrop showing tin freely in the stone, and eventually this may be a very valuable property.

The Great Britain Tin-mining Company have also acquired about 800 acres of lode tin land by purchase and alluvial lease during the year at the Mole Tableland, 15 miles northerly of Vegetable Creek. The Dutchman's and Bryne's lodes are now their property, on both of which they are engaged in doing a great deal of exploratory work, with a view of developing the lodes at a depth. On this Company's lately acquired property a lode has been found which for a distance of over ¼ of a mile is plainly traceable on the surface. On the spot where a shaft is now being sunk the tin is very rich in the stone, and bears unmistakably every indication of being a strong and rich lode and one that will amply repay any outlay incurred in developing it.

I cannot do better than give you an extract from a report of that Company's operations at the Mole Tableland lodes, which has been kindly furnished me by Mr. R. N. Williams, the mining manager, a gentleman of large practical experience in mining in various parts of the world:—

"At the present time several shafts are being sunk on the lodes at the Tableland, all of which bear lode tin ore of a very fair quality, but not yet in any great quantities, the matrix of which is generally composed of a siliceous composition in the form of quartz, without retaining any quantities of chlorides that are so essential in the most productive tin lode mines of various other parts of the tin-producing countries. I know from experience in this Colony and from the most reliable practical experience of others, that the indications as often associating with the formation of all mineral lodes do not safely work out the many established facts of the older mining countries; therefore the tin lodes of New South Wales require most careful and practical development that can be procured, in order that such may be brought to a favourable issue and capital judiciously expended.

"In connection with the developing of tin lodes in other countries, a depth of 500 feet has oftentimes to be reached before entering on the list of permanent paying mines. Invariably the sinking of shafts on tin lodes 'at various depths,' a zone of unproductive ground has to be passed through before any thing payable can be relied upon.

"Throughout the immediate neighbourhood of this tin district, I notice that a number of lodes have a very strong crop out, bearing a free granular oxide of tin ore, and at the deepest point yet reached in any of the mines the lodes have a strong tendency towards contracting; this, however, may possibly be the feature that will eventually lead up to the 'yet' unseen zone that in all probability may exist at a greater depth, which undoubtedly will prove to be one of the many causes that will in the future establish permanent paying mines in this tin-field. So far as the Great Britain Company have proceeded with their work in testing the various lodes, I think they have not any reason to be dissatisfied with results obtained, and I hope that the time is not far distant when they will be reimbursed for their outlay; at present they have twenty men engaged in exploring the different lodes, and as soon as the prospects are such that will warrant a greater outlay an expensive plant will be erected upon the most convenient site for the treatment of the ores, and all other extensive works."

The success of this Company will give an impetus to mining in a centre so close to Vegetable Creek that a large and rapid development may be expected. Tin lodes are bound to be the future great branch of our mining industry in this district, and the opening up of tin-bearing lodes must always be a source of great gratification.

The population is daily increasing, and the general health of this field continues to keep very good. Buildings of a more permanent nature are being constructed, and the township of Vegetable Creek rapidly enlarged, and business is very brisk.

That tin-mining is likely to become a permanent industry in this part of the Colony, affording employment to a great number of people, and the means of circulating a large amount of capital year by year, the above facts are more than sufficient to show. The future of this district (as I have just mentioned) depends entirely on the successful working of the tin lodes; for although further finds of alluvial tin will doubtless be made and work in connection with the development of those discoveries be carried on for some time, tin-mining must in the end be centred in the opening out of the lodes and in extracting the metal from the stone. Of course the length of time during which the deep leads will yield payable quantities of tin can only be conjectured, but as there are still thousands of acres of tin-bearing land only partially worked and unprospected, it is probable that other valuable discoveries will yet be made, and therefore opportunities in plenty for further enterprise and employment of labour on the Vegetable Creek Tin Mines.

Total yield of Tin ore from the Vegetable Creek Deep Leads.

Name of Company or Tributer.	Yield of Tin Ore during						
	1872-4.	1875.	1876.	1877.	1878.	1879.	1880.
	Ts. cwt.	Ts. cwt.	Ts. cwt.	Ts. cwt.	Ts. cwt.	Ts. cwt.	Ts. cwt.
The Vegetable Creek Tin-mining Company (Limited)	337 19	741 12	715 18	181 4	129 5	348 19	384 13
Campbell & Co. (Cubis)	......	......	217 0	......	......	4 10	......
Irby & Co. (Rose Valley)	167 0	......	55 12	......	4 0	9 0	......
Kangaroo Flat	60 0	......	3 10	28 0	106 0	112 0	90 0
The Springs	16 0	......	......	......	......	......	......
Griffiths & Hammond	......	......	......	......	......	231 11	111 7
Wesley Brothers	......	......	......	......	7 10	21 3	286 0
Surface Hill (Glen)	......	40 0	......	......	3 5	5 10	......
Procter & Co. (Graveyard)	......	......	......	9 0	7 0	8 0	......
Surprise Mine	......	15 0	17 0	16 10	8 16	57 16	35 10
Cadell and Mitchell	......	......	......	......	......	31 0	3 0
Salmon and party	......	......	......	......	......	7 0	21 15
Nagle and party	......	......	......	......	......	......	50 6
Fox and party	......	......	......	......	......	......	553 10
Partridge and party	......	......	......	......	......	......	186 16
Conlon and party	......	......	......	......	......	......	70 0
Proctor, Skean, and party	......	......	......	......	......	......	9 0
Ruby Hill Mine	......	......	......	......	......	......	27 0
Total Tons yearly yield from deep leads	580 19	796 12	1,009 0	234 14	265 16	836 9	1,828 17

Summary of yields from deep leads.

	Tons cwt.
In 1872 to 1874	580 19
1875	796 12
1876	1,009 0
1877	234 14
1878	265 16
1879	836 9
1880	1,828 17
Total	5,552 7

THE total yield of Tin Ore from the Vegetable Creek Mining District, from the commencement of mining operations in the year 1872, to the 31st December, 1880.

Name of Company or Mine.	Yield of Tin Ore during																Total yield from each mine or locality, to 1880.		Total.	
	1872&1873		1874.		1875.		1876.		1877.		1878.		1879.		1880.					
	Tons	cwt.	Tns.	cwt	Tns.	cwt	Tns.	cwt	Tns.	cwt	Tns.	cwt	Tns.	cwt	Tns.	cwt	Tons	cwt.	Tons	cwt.
Yield from Deep Leads, as above..	......		....		....		....		....		....		....		....		....		5,552	7
THE SHALLOW WORKINGS.																				
No Mistake Mine (Campbell & Co.)	30	0	80	0	80	0	4	0	10	10	15	15	29	10	6	0	255	15	....	
Great Britain Tin-mining Company (Limited).	28	0	120	0	431	0	547	9	285	17	519	1	737	0	756	6	3,424	13	....	
Tomison (now the Great Britain).	85	0	70	0	....		....		....		....		....		....		155	0	....	
Little Britain....................	20	0	100	0	105	0	126	2	81	0	76	12	37	5	13	13	559	12	....	
Little Wonder	95	0	65	0	139	0	133	2	92	0	50	0	36	6	11	5	621	13	....	
Moore and party	334	0	410	0	450	0	300	0	320	3	361	15	170	2	65	19	2,411	19	....	
Baalgammon (C. Scherf)	240	0	120	0	180	0	117	2	61	3	32	0	24	0	50	0	824	5	....	
Nonpareil (A. Cadell)	316	0	150	0	122	0	51	2	21	0	3	0	22	0	54	0	739	2	....	
Vegetable Creek Mine (Hall & Co.)	230	0	120	0	80	0	78	0	30	0	57	0	51	0	63	0	759	0	....	
Rothschilds (Moore & Co.)........	150	0	110	0	115	0	85	0	62	10	206	18	234	0	206	19	1,170	7	....	
Six-mile (Hall & Co.)	90	0	80	0	60	0	36	0	40	0	26	10	44	0	17	0	393	10	....	
Gordon's	38	0	40	0	80	0	5	15	14	10	7	5	8	10	....		194	0	....	
Grampians (Hall & Co.)	20	0	100	0	40	0	27	0	....		6	10	51	10	55	0	300	0	....	
Tent Hill (Hall & Co., Moore & Co.)	195	0	60	0	50	0	46	0	15	0	8	0	38	0	103	0	515	0	....	
Tent Hill Creek	107	0	40	0	10	0	37	0	8	0	42	0	31	0	25	16	300	16	....	
Glen Creek (Banca, Glen Lode, and other Companies).	46	0	70	0	49	0	38	0	21	0	15	0	49	0	53	0	341	0	....	
Gulf Creek (including 194 tons Gulf Stream Co.)	72	0	50	0	75	0	62	0	232	0	88	10	84	0	45	0	708	10	....	
Mole Tableland (Silent Grove, Nine-mile, and other localities approximately).	200	0	80	0	100	0	73	0	50	0	30	0	102	0	76	0	711	0	....	
Y Water-holes Creek (Big Ben, Graveyard Creek, and other M. Ls.)	34	0	50	0	80	0	77	12	14	10	62	15	55	5	127	15	501	17	....	
Y Water-holes Creek (Moore & Co.)	15	0	....		....		155	10	105	5	31	18	60	6	72	15	440	14	....	
Irby and party (Connolly's Tribute).	......		....		....		....		....		29	10	14	3	18	0	61	13	....	
Graveyard Creek	......		....		....		....		....		....		....		44	0	44	0	....	
Silent Grove lodes	......		....		....		....		....		....		....		3	0	3	0	....	
																			15,436	6
Total yearly yield from shallow workings.	2,345	0	1,915	0	2,246	0	1,999	14	1,514	8	1,669	19	1,878	17	1,867	8	15,436	6	20,988	13

NEW ENGLAND AND CLARENCE DISTRICT—BOOROOK DIVISION.

(J. P. Curran, Mining Registrar.)

I HAVE the honor to forward herewith my annual report for the year ending the 31st December, 1880.

With a view to obtain reliable information respecting the amount of work done and the quantity of metal won, I have visited the various mining localities in my division; and it is gratifying to report that, notwithstanding the continued drought from which this district has suffered during the past nine months, and by which mining operations have been considerably retarded, particularly alluvial workings, the output of metal for the year bears favourable comparison with that of the preceding year; and I think I am justified in saying that the present position and prospects of the mining industry throughout the Boorook division, though not exceedingly bright, are nevertheless encouraging.

I have experienced great difficulty in procuring accurate returns of the quantity of gold won from the alluvial workings, as many of the miners are unwilling to give any information respecting their earnings. From the local gold-buyers I learn that the amount of gold that has passed through their hands is 2,341 ozs., value £8,193; but this is by no means a fair estimate of the actual winnings, as numerous small parcels of gold have been taken out of the district and disposed of in other places.

The amount of silver won during the year, independent of that which has been obtained by Hall & Co. (who have withheld returns), is 31,725 ozs., value £6,443. In consequence of the chief silver producers, Messrs. Horton & Co., shipping their bullion to England *via* Brisbane, the aggregate returns of this metal cannot be estimated in the returns of this Colony, or the public accurately informed of the produce of these mines.

During the present year a discovery of some importance has been made in the old Nil Desperandum Mine. This mine was partially worked and abandoned some years ago; Mr. Hall, the present leaseholder, in working a small silver vein accidentally cut a rich gold-bearing reef, on which he has continued to operate profitably for the last six months, during which time twenty-two men have been employed raising stone. I am not, however, in a position to say what amount of ore has been raised or the quantity of metal extracted, as the returns have been withheld. Four shafts have been sunk on the course of the lode, of the following depths:—93 feet the deepest shaft, two 70 feet, and one 50 feet. The reef has been stoped out from the 70-feet level to the surface. The sinking of the deepest shaft has been resumed, with a view to test the quality of the ore at a depth.

The Golden Age Mine, which has hitherto occupied the premier position for the output of metal, is at present idle, owing to the whole of the chloride ore, which extended from the surface to the 70-feet level, having been exhausted, and the absence of proper appliances for the successful treatment of the sulphide ores which are met with at a deeper level. Application has been made to the Warden of the district, and suspension of labour granted to the proprietors, to enable them to take the necessary steps to erect suitable machinery for the treatment of the more refractory ores. This Company (Horton & Funnell) have up to the present date raised and treated 3,010 tons of silver ores, for 55,000 ozs. of metal, and have expended over £13,000 on this field. Latterly they have found by sending their metal for sale to the London market they reap a decided advantage over the prices allowed by the Mint in Sydney, and have made arrangements whereby the whole of the silver they now win is sent to England; this does not show that the Mint is of much advantage to the silver-mining industry.

Work will be resumed on this Company's property early in January. It is to be hoped that, from experience gained in the past, the future extraction of the metal will not be as much a matter of difficulty to them. The want of that indispensable element, capital, has been the serious drawback to the development of this field. No doubt in time this difficulty will be surmounted, and the future of the Boorook Silver Mines established.

The Silver King Tribute is the next mine of importance on the Golden Age line. This mine is being worked on tribute by J. Dennis & Co., and is situated on the northern boundary of Horton & Funnell. Up to the present the operations of Mr. Dennis have been scarcely remunerative. A shaft has been sunk to a depth of 85 feet, and elaborate reducing works have been erected, at a cost of £1,200. During the present year about 228 tons of ore have been raised and crushed, from which was obtained 1,899 ozs. of silver, value £379 16s. I am happy to state, however, that a decided improvement has taken place in this mine within the last month, and present appearance indicates a prosperous future for this Company, and hopes are entertained of their being repaid their heavy outlay.

The Woolshed Reef, which is situated about 2 miles north of Boorook, has been worked by Messrs. Johnson & Sons for gold and silver. A shaft has been sunk to a depth of 40 feet; 14 tons of ore have been raised and treated by the Wheeler's pan amalgamation process, for the satisfactory return of 256 ozs. silver, value £64.

At the Lunatic Reefs there seems to be a revival in mining matters; a number of rich surface patches have been discovered within the year, but in no case have the explorations been extended to any depth; the discoverers, though feeling confident that rich deposits exist at a greater depth, are unwilling to sink, but are content to confine themselves to searching for small patches of gold that are occasionally met with on the surface.

At the Lunatic Gold-mining Company's mine, on Kangaroo Creek, a considerable amount of work has been done and a large quantity of stone raised; a shaft has been sunk on this mine to a depth of 137 feet, and is I believe the deepest sinking that has been done in this locality. The supply of water being insufficient for crushing purposes, this Company's battery has been idle for the last nine months; they have at present awaiting treatment about 160 tons of stone, from which is expected good results. At the commencement of the year 63 tons of general stuff was crushed, for a yield of 189 ozs. of gold, value £661 10s.

At the Golden Crown claim, M'Leod and Gay are driving an adit level from the main creek, with a view to intersect the reef at a depth of 90 feet from the outcrop on the surface. The tunnel is in now about 210 feet, and it is expected the reef will be met with in the next 40 feet; some rich patches have been met with in this claim and worked out at shallow levels. There are many other likely-looking places in the vicinity of the Golden Crown that are worthy of a trial.

The old Timbarra diggings, which have for a number of years supported a fair population, are now almost deserted; on McLeod's Creek however a few parties of Chinese and Europeans are located, and all seem to be satisfied with the result of their labours. In the vicinity of Poverty Point several parties are also profitably employed, the average earnings of the majority of them being about £2 per week per man, whilst others are making as much as £1 per day.

The Surface Hill Sluicing Company at Poverty Point are pushing on vigorously with their tunnel and are making rapid progress, considering the hard nature of the ground they are driving through. Already, £8,000 have been expended by this Company in driving tunnels, cutting races, and erecting extensive fluming for the conveyance of water to their workings, which, when completed and in full working order, will considerably increase the output of gold in this portion of the division; besides, if results are up to expectations, it will induce others to direct their attention to many other likely-looking places in this locality. The gold is found here in a decomposed granite formation, and runs in dykes of considerable extent; in many places payable gold has been found in these deposits at a depth of 50 feet. A party of Chinese working in one of these dykes have a face of gold-bearing matter about 100 feet wide and 50 feet in depth, and when fortunate enough to have a fair supply of water can make from £3 to £4 per week per man. The gold is very fine, and requires careful manipulation to prevent loss. The great drawback to miners in this place is the scarcity of water for sluicing purposes, which cannot be obtained in sufficient quantities except in wet seasons, the Surface Hill Sluicing Company having secured the right to all permanent streams.

At Pretty Gully I found about thirty-four men who are chiefly engaged in fossicking in the old creek workings. One or two parties have been prospecting for reefs in this neighbourhood, but up to the present nothing of any value has been discovered.

At Tooloom and Mosquito Creek mining matters are assuming a more healthy appearance. The deposits of drift in the beds of the creeks and gullies having been worked over so often have at last become unprofitable; the miners are now directing their attention to the made points several feet above the bed of the creek, where gold has recently been found in payable quantities, and a few parties are making fair wages. The scarcity of water has been very much felt in this locality for the last six months, and all sluicing operations are at present suspended.

The Pioneer Reef at Tooloom has been idle for a length of time, through a private dispute amongst the shareholders. The last crushing of 30 tons of stone yielded 62 ounces of gold. No crushing has taken place since December 1879.

During the year 158 miners' rights and 12 business licenses have been issued at this office.

NEW ENGLAND AND CLARENCE DISTRICT.—TENTERFIELD DIVISION.

(J. W. Simons, Mining Registrar.)

I HAVE the honor to submit my annual report of the state of mining matters in that portion of the Tenterfield mining division which came under my notice for the year 1880.

In sending in my report for the year 1879, I was under the impression that the goldfields at Boonoo Boonoo would have turned out much better than they did for the year 1880, but in this I have been disappointed, owing to certain work which was supposed to have been carried out in that year not yet having been completed. I may add that there are supposed to be many good gold reefs on these fields, none of which up to the present have been tried. A person named Vickery intends shortly to test one of these reefs and has just received an engine with fourteen stampers for that purpose, and hopes to have it in full work in a couple of months.

So far as the alluvial diggings are concerned there are nineteen Europeans on this field, and their average earnings have been about 30s. per week per man; four have been at wor for the last six months taking a tail race into Dismal Swamp, and expect to complete same in the course of a month or so, when they are in hopes of coming on a rich deposit of gold. It has been the opinion of the diggers for years that Dismal Swamp once tapped would yield a very considerable quantity of gold. The washdirt is of a sandy, loamy nature, and the gold is easily extracted. The gold in this locality is of a poor quality, owing to its being so much mixed up with silver, which is the cause of its bringing so low a price. The average of the gold may be taken at £2 10s. per ounce.

During the year 1880 sixty-three miners' rights have been disposed of through this office.

NEW ENGLAND AND CLARENCE DISTRICT.—WILSON'S DOWNFALL DIVISION.

(*W. Hicks, Mining Registrar.*)

I DO myself the honor to forward my annual report for the year 1880, on the Wilson's Downfall division of the New England and Clarence Mining District. I regret to have to say that, although there have been more miners on this field during the year 1880 than have been in the previous year, there is no change for the better in the yield of ore. The miners are scattered over the whole of our tin-bearing country (which exceeds 50 square miles) in small parties, and there is not one party on what could be termed a good run of tin ore. As I mentioned in my last report, the beds or main watercourses on the principal creeks are worked out, and the present workings are only patches here and there in the banks of these creeks, which are almost alike all over the mines, *i.e.*, two shafts can be put down within a radius of 10 yards, the one is tin-bearing perhaps for 6 or 7 yards around it without any apparent lead or run from any creek or other source, and the other is without the colour of ore in it. The average depth of these mines is from 7 to 10 feet, and average amount of wash from 3 to 18 inches. I am sorry that I cannot give a detailed description of the different workings on these mines, in consequence of the greater number of the miners being at work by virtue of mineral licenses, and are continually shifting about from one place to another on this field, as well as from here to the Stanthorpe Mines in the Colony of Queensland, and back again. I have noticed on a portion of the Clifton Tin-mining Company's ground on the eastern bank of Wylie Creek, being lease No. 3,649, a very good sample of tin ore in payable quantities; it is worked by Donald M'Alister, who has employed a party of twelve Chinese for the past five months, and has won 20 tons 8 cwt. of tin ore during that period. This mine is about 300 yards from the main creek, and does not seem to have any connection with the run of ore which has been already worked there. This mine is only 4 feet deep, 3 of which is washdirt on a soft granite bottom. The principal or largest workings on these mines are on a 300-acre mineral conditional purchase, the property of Amos Brothers, and situated on Amosfield (or Herding-yard Creek), and managed by Mr. William Seaman, who employed an average of twenty Europeans and forty Chinese during the year, and have won 127 tons of tin ore in that time. But in this claim, as in most others on this field, the original watercourse has been worked out, and they are now depending on patches or pockets in its banks, which are very uncertain.

Further down this creek on its western bank, on some forfeited selections, formerly the property of the St. Leonards Company, are a few mineral license selections worthy of notice, as they are yielding a very handsome return of ore, which seems to be running at right angles with the main creek. The best of these mines is the property of Messrs. Irvine & Co., and managed by Mr. Hugh Gunn, who, with an average of eight men from the 24th of September to the 31st of December last, won 19 tons of tin ore; the depth of this mine is from 8 to 12 feet, with from 6 to 18 inches of wash on soft granite bottom. Two other parties are working the adjoining ground, which is not altogether so good, but they are making good wages. Within the last three months a number of miners have commenced mining operations on the heads of Ruby Creek, Dixon's Gully, and New Zealand Gully, and all are getting payable tin ore, if a supply of water was available (even by pumping it and using the same water repeatedly), but the extreme dry season has greatly retarded their progress here as elsewhere on this field. The depth of the present workings are from 7 to 11 feet, with from 1 to 12 inches of wash on a soft granite bottom, which experienced miners believe not to be the real bottom, and intend giving it a trial for deep mines during the present year. There is also surfacing to be found in all the ridges adjacent to Dixon's and New Zealand Gullies, which could be remuneratively worked if a supply of water was obtainable, but as they cannot get any water on to this ground it remains idle. All the tin-bearing creeks on this field, viz., Two-mile Creek, Wilson's Downfall or Wylie Creek, Cemetery Creek, Amosfield (formerly Herding-yard Creek), Ruby Creek, Dixon's Gully, and New Zealand Gully, and Maryland Creek, take their rise from the Great Dividing Range which separates this Colony from the Colony of Queensland, and it is also this range which separates these tin mines from the Stanthorpe mines in the latter Colony, which have been so successfully worked for a number of years; and the nearer to this range that mining operations are carried on the coarser and less waterworn samples of tin ore are to be found, on both sides of the border, which may to a certain extent go to show that there must be a rich reef or deposit of ore in this range from which the alluvial mines on both sides of the border have received their supply of ore. But in the absence of capital we must be content with surmising, as no attempt has yet been made to try it. I may also add that on the heads of all these creeks near the range the mines are deep; some shafts have been sunk from 20 to 30 feet and very good prospects obtained, but the water being very scarce, even in wet seasons close to the range, this ground cannot be worked remuneratively. There was a shaft put down at the head of Ruby Creek a few weeks ago, by a man named Kernes. At 7 feet he came to very fair wash on a pipeclay bottom ; he then went down for 12 feet through soft pipeclay, and finding no change of soil he abandoned it, although he, with other miners, believe that pipeclay is not bottom on this field ; and I have no doubt but this ground will be tried for another bottom shortly, as I have noticed, within the last week, that a few strangers have taken out licenses and have gone prospecting in that locality. The total number of European miners actually at work on this field is 108, with a tendency to increase, and 350 Chinese, being an increase of 41 of the former and 100 of the latter upon the number in 1879.

Notwithstanding the increase of miners, the total amount of ore raised during the year 1880 is only 677 tons (of the value of £29,488), being a decrease on the quantity of ore raised in the previous year by 32 tons, showing clearly that it is the ruling high price of tin ore (which is now £48 on this field) that induces miners to go prospecting and work comparatively poor ground. I have sold six miners' rights, eight business licenses, and 102 mineral licenses during the year 1880.

New England and Clarence District.—Dalmorton Division.

(*W. F. Poole, Mining Registrar.*)

During the past year mining generally has been very dull, although several nuggets varying from ½ ounce to 3 ounces have been found. The yield of gold has fallen below that of 1879; this may be accounted for by the continued dry weather. Since Mr. Pittman's (geological surveyor) report on the reefs here, several leases have been taken up, notably one by Jackson and party on the Lone Star Reef. Mr. Jackson, a miner of twenty-six years standing, and resident on the Barrington gold-field, seeing Mr. Pittman's report, determined to pay the reefs here a visit. After carefully prospecting for three weeks he selected the Lone Star Reef, took up a lease, and has left to arrange his affairs at the Barrington, prior to commencing operations. If a few more miners like Mr. Jackson were to come here, a bright future might be anticipated for the Dalmorton division.

New England and Clarence District—Solferino Division.

(*J. Fisher, Mining Registrar.*)

There has been an utter stagnation in vein-mining here until the last two months of the year, when the good returns from one of the abandoned mines caused an inclination to prospect further in several others. In the early part of 1880, Messrs. J. B. Bassetti and J. T. Adam, with two working miners, who were in possession of the old Laird and Bacon lease, drove a tunnel along the course of the reef, but without any payable result. The same parties have now taken up the Sir Walter Scott reef at Cangi and have crushed (by hand) two ½-ton parcels which gave very promising results, have concluded to sink, and are down about 40 feet. There are several notices of intention to apply now posted at this office, which will be forwarded upon the expiration of the term of notice.

In alluvial I am sorry to say there is no amendment. The Ewengar party, who succeeded in cutting through the hill and thereby gained a very fine fall and tail race, have not yet met with an adequate reward. The last paddock, however, bears a more promising appearance.

All other alluvial miners are simply making a bare living, the scarcity of water interfering with them very greatly. There has been a supply of rain sufficient to give the grass a most luxuriant growth, but the supply to the miners is very deficient, and the alluvial ground in this division being entirely sluicing ground, a scarcity of water diminishes the returns to a minimum.

New England and Clarence District—Ballina Division.

(*Henry Bassmann, Mining Registrar.*)

Although thirty persons have taken out miners' rights in this office during the year, none of them are practical miners. When one obtains a little gold fossicking along the beach north and south of the Richmond River Heads, others rush there, sometimes returning within a week to their several occupations as farmers or labourers. What their gatherings have been is impossible to ascertain. Three persons only have been almost continuously at work since the beginning of March to the end of November (none are at work now); their average takings have been at least 1oz. per week per man, for which they have obtained from £3 7s. to £3 10s. In a practical sense this place is not a gold-field; it is only after a severe easterly storm, when the sea has made a breach into the terrace, that a little gold is obtained at some of these places; often a week's work of two or three men convinces them that it will not pay; they sometimes try three or four different places with the same result, and leave the sinking for gold in disgust. I cannot see how I can justly fill in the forms sent me.

There are no local tin, copper, or iron mines in this division.

Hunter and Macleay District—Copeland Division.

(*Mr. Warden De Boos, P.M., Copeland.*)

I have the honor to submit to you my report on the Copeland division of the Hunter and Macleay Mining District for the year 1880.

Having been for so short a period in charge of this division, and having had my time much occupied with other official matters, I have not had the opportunities I would have desired for making myself as intimately acquainted with the work carried on upon the several lines of reef as a careful report would have necessitated. My report must necessarily be somewhat brief and defective.

This however, as it happens, is of the less consequence as no material change has occurred upon the several lines since the last report forwarded to you by my predecessor in the division; beyond the fact that less work has been carried on owing to the large number of the mining population of this division that has migrated to Temora, whilst some of the lines have been altogether deserted. For instance, there is not a single lease at work on the right-hand branch of the Back Creek, whilst Campbell's machine has been moved from it to a more favourable situation nearer the working leases on the left-hand branch. Besides this, many applications for a suspension of labour conditions on leases have been made, but I have been very careful in dealing with such applications, never granting a total suspension of labour conditions save under very exceptional circumstances. In most cases I have certified for a reduction in the amount of labour employed, but have required as a proof of good faith that some work should be constantly carried on.

Whilst on this subject it may not be out of place to mention that, this being essentially a leasing division—very few claims being taken up under the Mining Board Regulations—I think it would be desirable to have a reliable officer whose duty it would be to periodically inspect the several leases, and to report to the Warden all cases in which the labour conditions were not being fulfilled. At present, taking into account the number of leases held on this field and the amount of labour the lessees bind themselves to employ, I find that there are not actually on the field miners sufficient to represent that labour. This shows that there must be something radically vicious in the way the system is being worked upon this field. A few persons hold in their hands a number of leases which they have not the means of working, but who yet retain them for purposes of speculation. This they manage to do by a judicious twisting of the Gold Leasing Regulations in a way to meet their own ends, but which is utterly subversive of the true meaning and spirit of those regulations. This wholesale monopoly by unscrupulous individuals has been the means of keeping this gold-field in the back ground, when under other circumstances it should have gone ahead and held a premier place amongst the great auriferous tracts of the country. Even with the great exodus of miners which, commencing early in 1880, has continued to the present time, the gold actually purchased by the Bank here during the year has reached in round numbers 8,400 ounces, or an average of 700 ounces per month. This is by no means a bad return, when it is borne in mind that the labour is to a great extent intermittent, and that work is not by any means carried on in that steady and regular style which marks the operations of the larger reefing operations of other fields.

Frequently the community has been startled by the splendid returns from crushings from one or the other of the lines of reef, and capitalists have more than once had their attention drawn to the field, but any attempt on their part to get a footing on the field has been rendered nugatory by the exorbitant prices these speculative lessees have demanded for interests in their holdings. This would be comprehensible were the leases at work, but being held unworked and only for speculative purposes it becomes an evil that cannot too soon be checked. Working miners, all with more or less capital, have also in their turn been driven away in disgust at finding the whole country side pegged out and no chance open to them of getting either claim or lease on which to set to work. The consequence has been that many of these reefs which would pay handsomely if worked steadily and systematically, and some of which do still give large returns even with the inefficient management bestowed upon them, are languishing ; some are closed altogether, whilst others are in abeyance, held by the smallest amount of labour that the lessees can cajole the Warden into reducing them to.

That the reefs are good there can be no doubt—that they give good returns has been shown by the results of crushings—and that they are extensively diffused throughout a radius of some 20 miles from Copeland has been proved by unmistakable prospects. There is then every prospect that in time the Copeland division will become a great productive reefing district. All that is required to attain that end is a modification of our present leasing system, and a careful supervision of the several leases to see that the labour conditions are strictly fulfilled. By these means schemers and speculators will be prevented from monopolizing ground to the detriment of the solid interests of the field, and to the exclusion of honest, hard-working miners willing to give their labour and invest their capital in the development of the district.

At the present time there are not more than some ten or twelve really productive leases at work. To be sure there are some few, too few, where a persevering search for the reef is being maintained, and with every prospect of success, but still the proportion of leases at work to those held in abeyance is very large, and shows the necessity for some change in the present mode of leasing. And it may be here remarked that there is this peculiarity in the reefs of this division—they are seldom found to outcrop on the surface. There seems to have been little if any cutting away of the reefs—quartz is seldom encountered amongst the creek boulders, and many of the reefs have not been met with until a depth of 30 or 40 feet has been sunk. Their underground formation is also peculiar, as in several instances they have been proved to fall away along the line of strike, dipping at an angle of 45° and even less, and giving out suddenly as the miners tunnel along the line of reef. So again, a reef is encountered rising up abruptly on the line of strike as if it had been encountered on the dip or underlay. I saw a curious instance of this in a tunnel at Kerriput, where the line of reef dipped so abruptly that had the tunnel been only 1 foot further north the reef would have been missed. This tunnel has been driven 140 feet into a steep hill side, in order to reach a reef which was outcropping on the surface and showed good prospects ; but though by calculation they have passed the point of outcrop, the outcropping reef has not been reached, whilst another was encountered as described, some 40 feet or more from that which was driven for.

This will give some idea of the difficulties with which the miners here have to contend, as well as of the expense to which they are put in the preliminary work of finding the stone. Under such circumstances, mere labour unaccompanied with capital is of little avail, and, as I have before stated, capitalists have to a great extent been frightened from the field by the action of the speculators. There is however a compensation for this sudden and inexplicable breaking off of the lines of reef in the circumstance that, in driving for one reef another is unexpectedly encountered, often running transversely to the line of that sought for, so that in any given area of the reef country workable stone is almost sure to be encountered, though often at a considerable depth.

There are now three crushing-machines available on the left-hand branch, and a fourth at the Prince Charlie reef, on the Barrington fall of the range. Unfortunately they are not kept constantly at work, as the stone at present raising is insufficient for the purpose, owing to the intermittent way in which work is carried on. The Prince Charlie machine has also been placed in an unfavourable position in regard to the supply of water, as the dam in the first instance was made so carelessly that the water oozed away nearly as quickly as it came in. This has since been remedied, though the water area conserved is not by any means sufficient to keep the machine in constant work.

At the Bowman there is little or nothing doing. The battery there is in good working order, but it has remained idle for some time, as only one or two leases are at work there, and these not full-handed.

On my visit to Cobark in November last I found it all but deserted—not a single lease or claim was at work there; whilst the Chilian mill which has been erected there was putting through a lot of rubble stone which had been left on the ground, but which did not pay for that slow process of crushing. With anything like energy and enterprise there is a fine prospect here for quartz-mining. There is a splendid permanent stream of water capable of working a thirty stamper battery, precipitous hills where a tunnel at a short length would cut the reef at a great depth, a good fall for the construction of tramways, and plenty of good timber for making them. The stone could be brought from the tunnel to the battery at little or no expense beyond the first cost of making the tramway, and could be crushed also at a very small outlay. Stone that will go on the very smallest average ½ an ounce to the ton is to be had in any quantity, and all that is required is spirit and capital for the start.

The same thing may be said of the Kerriput as of the Cobark, though here the advantages are considerably greater in every respect, so much so that I regard it as one of the finest prospects for the outlay of capital that is to be found in the Colony, provided that the capital be invested judiciously and the reef be worked under experienced management. Some four leases are at work here, and a tunnel has been put in on one of them for a distance of 140 feet, laying bare a fine body of stone that gives promise of at least twelve months stopping. There is a good run down a gulley on a light incline from the adit mouth to a site selected some time ago for a crushing battery; a fine stream of water capable at all seasons of working thirty head of stampers, and a race cut ready for use on an overshot water-wheel. No machinery, however, has yet been erected here, though preparations were made some twelve months ago for putting up a battery. It has recently come to my knowledge that Messrs. Murphy and Peters, of Copeland, intend to erect a battery here in connection with a lease in which they are interested. Such a venture cannot but be payable under the conditions I have enumerated; and in addition there is the fact that the stone heretofore mentioned shows gold freely throughout, whilst there is a large body of it—the reef ranging in width from 13 to 36 inches.

Some of the leases on the Burneal Creek are being steadily prospected; and the miners there are in great hopes of shortly being well paid for the labour they are now bestowing on the ground.

About four or five and twenty miles from Dungog are situated the Little River or Wangat reefs. These reefs have given a good return for crushings at the new ten-stamper battery recently erected there. The pneumatic battery originally brought into work there did not meet the wishes or requirements of the miners, as besides the slowness of the process an impression prevailed that a large proportion of gold was lost in the crushing. Be this as it may, the fact remains that better returns have been obtained from the crushings at the new battery than were given from the old one. There has been a further drawback to the advancement of these reefs in the fact that the miners here seem to be most litigiously disposed, and have been engaged as much in quarrelling and Court work as in reefing. So much has this been the case that I have been called upon to settle more disputes in this locality than in all the rest of the Copeland division put together.

HUNTER AND MACLEAY DISTRICT—BULLADELAH DIVISION.

(Mr. Warden Rowling, P.M., Bulladelah.)

IN furnishing my report for the year 1880, I have the honor to remind you that at the close of the previous year the greater portion of the above gold-field under my charge was suffering considerable depression, caused principally by imperfection in the gold-saving power of the crushing-machine at Coolongolook. Although to a great extent this defect has been remedied, the attractions of other gold-fields have drawn away many of the miners, and local pursuits have occupied the attention of others; to such an extent have these causes operated that the field has been almost deserted, and consequently out of 100 leases issued, only eight have been executed.

During the year, 109 miners' rights and three business licenses were taken out at this office.

Lately slight indications to re-select certain portions have been apparent, and I am still of opinion that if operations were conducted with economy and upon systematic mining principles many of the portions now abandoned would be found remunerative.

In the locality of Boolbie work has entirely ceased.

At Paddy's Creek, I am informed, a strong Company has recently been formed, who intend erecting machinery and carrying on operations vigorously.

Gold has been discovered and a lease of 10 acres applied for about midway between Coolongolook and Paddy's Creek.

HUNTER AND MACLEAY DISTRICT—COPELAND DIVISION.

(James Baker, Mining Registrar.)

WITH a view of obtaining correct data for my annual report I sent out a number of circulars to the leading mining Companies within this division, asking for information—statistical and otherwise—but one only of these circulars has been responded to. My report will therefore of necessity be *minus* some information that ought to be found in it. Some of the figures too are estimates only; still I think, for all practical purposes, they may be taken as close and reliable approximations.

Population.

The population within this division was considerably reduced in number during the year. The causes of this decrease will be dealt with further on in my report.

I learn from the collectors of the electoral lists for 1881—which were collected in January—that there are 443 electors within this division; and as these are all adult males, many of whom are married with families, the population may be set down at about 900 souls, of whom 250 may be classed as miners; say 200 quartz miners, and the remainder alluvial miners. I am not aware of any Chinese resident within this division.

Yield of Gold.

The following table will show the amount of gold forwarded from the division by escort during the year:—

1880.	ozs.	dwts.	grs.
January	218	19	20
February	15	14	12
March...	1,064	11	4
April	532	19	7
May	456	2	12
June	166	7	2
July	2,997	6	1
August	342	19	5
September	246	8	21
October	656	10	13
November	843	16	6
December	784	13	18
	8,326	9	1

From a statement kindly furnished me by Mr. Waddell, the manager of the Australian Joint Stock Bank here, I learn that 8,354 ozs. 16 dwts. was purchased by that corporation during the year, of which 7,715 ozs. 6 dwts. 2 grs. was from quartz, and 639 ozs. 9 dwts. 22 grs. was from alluvium. The escort returns contain 18 ozs. 6 dwts. which is not included in the statement given by the A. J. S. Bank. The actual amount of gold, therefore, purchased during the year was 8,373 ozs. 2 dwts. The yield of—

	ozs.	dwts.	grs.
Quartz	7,733	12	2
Alluvium	639	9	22
	8,373	2	24

The figures given above are ascertained facts. We know that the figures show the minimum yield for the year; probably some gold left the district by private hands, but of course of this I am unable to give any further particulars.

There is considerable disparity in the fineness (quality) of the gold obtained in this division, and the price for the raw gold has varied from £2 19s. to £3 15s. per oz., the average value having been about £3 7s. 6d.

The alluvial gold has varied from £3 6s. 3d. to £3 15s., and the quartz gold from £2 19s. to £3 14s. per oz.

The following figures will show the comparative yield, price, and aggregate value obtained during the years 1879 and 1880.

Year.	Yield.			Average price per oz.			Total Value.		
	ozs.	dwts.	grs.	£	s.	d.	£	s.	d.
1879	10,015	13	12	3	10	0	35,056	7	3
1880	8,373	2	24	3	7	6	28,258	15	0
Decrease in 1880	1,642	10	12	0	2	6	6,797	12	3

It should however be stated, in fairness to the year 1880, that at its closing the Prince Charlie Company had at grass about 400 tons of quartz, which they had been unable to crush for want of water. They have since crushed 40 tons of this stone, which yielded 73 ozs.; and as the stone which gave this yield may be taken as a fair sample of the bulk, it may be reasonably assumed that if the Company could have crushed the lot, about 730 ozs. of gold would have been added to the year's yield, and the decrease for the year reduced to about 900 ozs.

Notwithstanding the decrease in the yield of gold for 1880, as compared with 1879, if the number of miners which were employed during those years respectively be considered, 1880 shows a much better result than 1879, that is to say the average earnings per miner were much larger in 1880 than in 1879.

Machinery.

Under this heading I am glad to be able to report an improvement both as to quantity and quality. At the end of 1879 we had in this division four quartz-crushing plants, or an aggregate of forty stampers; we have now the following:—

Quartz-crushing plants.

Owners.	Where situated.	Nominal Horse-power.	Number of Stampers.
Burley & Thomas	Left-hand Branch	10	10
Driscoll & Co.	Rainbow	10	10
Campbell	Left-hand Branch	10	10
Vivian & Co.	Bowman...........................	10	10
Prince Charlie Co.	Prince Charlie Reef	15	15
	Total..........	55	55

All these machines are driven by steam power.

Mr. Campbell's machine was at the end of 1879 standing at the right-hand branch, but owing to the falling off of the yields in that part of the division the machine was not fully employed; and as the manager, Mr. Stephen Eddy Richards, saw better prospects at the left-hand branch for obtaining work for the machine, he advised its removal, and his advice was accepted. The machine has therefore been removed and re-erected, and greatly improved; and as it now stands in an excellent position both for water supply and proximity to the leading mines, the machine may be considered as having a prosperous future before it.

The Prince Charlie Company's machine, given in the above table, was erected during the year. Some few months ago Mr. Duncan M'Murrick, a mining speculator who for the last twenty-five years has been investing in gold-mines in Victoria, New South Wales, and Queensland, paid this district a visit, with a view of seeing whether or not there was an opening for a quartz-crushing machine. Among other eligible sites his attention was directed to the Prince Charlie, and after a thorough examination of the mine satisfied himself that it was well worth his attention. Negotiations were entered into with the Company, by which he agreed to erect a first-class machine for an interest in the mine. The machinery has been erected, and I understand that both Mr. M'Murrick and the original Prince Charlie Company are well pleased with their prospects; and I am fully persuaded that the arrangements will be mutually advantageous.

There are three horse whims and two horse whips employed for winding purposes, but in no instance is steam power thus employed. The windlass is generally used for winding.

The value of machinery and implements employed in mining within this division may be roughly estimated at about £11,000.

It had been expected that long before now a quartz-crushing machine would have been erected at Kerriput, but I understand that all the negotiations have fallen through without practical result. Why they should have fallen through it is difficult to say. I have never been able to personally inspect the district, but it has a most excellent reputation. Our most experienced and able mine managers pronounce the district a most valuable one from a quartz-mining standpoint. The lodes are large, rich, and present every appearance of permanency, and the district well deserves the attention of capital, and yet it is all but at a standstill for want of crushing machinery.

The removal of the Prince Edward Machine from the right-hand branch, as before stated, has had an injurious effect upon that part of the division and caused its almost total depopulation. The yields had greatly fallen off, a large exodus of the population had set in, and several of the mines had been abandoned prior to the removal of the machine; still a few persons remained who had faith in the locality, and others were disposed to give it further trial; but when the machine was taken away miners had no means of obtaining the gold from the stone. For some time past these mines had not been paying even with the machine on the spot, and when it was taken away the chances of success were reduced, because to cart the stone to the nearest machine would probably have cost at least 10s. a ton extra; so, with declining faith and increased difficulties, the locality had to succumb.

In the earlier history of this gold-field the right-hand branch was regarded as a promising locality and some rich yields were obtained, and I am glad to note that recently there has been a growing faith in its future. Several leases have been applied for, and I am informed by Mr. James Irwin that he is contemplating the erection of a powerful first-class crushing plant; he has already secured an excellent site for this purpose. He is of opinion that with good and powerful machinery stone can be efficiently treated at a price that will allow poor mines to be worked and yet leave a profit for the machine, and that by these means the right-hand branch will be developed and eventually proved to be a profitable reefing locality.

Miners' rights and business licenses.

The decrease in the number of miners in this division has as a matter of course resulted in a decrease of the number of miners' rights issued from this office during the year, as will be seen by the following statement:—

Number of miners' rights issued in—

1879	945
1880	564
Decrease	381

With regard to business licenses, however, 1880 has a slight increase over 1879 :—

In 1879 there were issued twenty-six for twelve months and fifty for six months, yielding revenue amounting to	£51 0 0
In 1880, there were issued nineteen for twelve months, and sixty-fixe for six months, yielding revenue amounting to...............	51 10 0

If it should appear singular that with a decreasing population there should be ever so slight an increase in the revenue from business licenses, I might explain that it was not because of an increase in the number of business people, for on the contrary there has been a decrease; but because in 1880 the law relating to business licenses was more strictly enforced. During the first year or two after the discovery of gold here a loose system with regard to business licenses had been allowed to exist, and many persons were allowed to carry on business without holding a business license; and when in the early part of 1880 the proper officer directed attention to this and insisted upon the law being observed, some dissatisfaction was expressed; however, as firmness was exercised and the law carefully and courteously explained, the dissatisfaction subsided, and the law was obeyed.

Applications for gold-mining leases.

According to the records, the first application for a gold-mining lease in this division was made on the 30th November, 1876, and up to the end of that year one other application only had been made. The former application was for 5 acres and the latter for 3 acres, so that at the end of 1876, 8 acres only had been applied for under regulations relating to gold-mining leases. It might be interesting to trace the progress of these applications. I therefore give the following:—

TABLE of Applications for gold-mining leases at Copeland.

Months.	1877. Applications.		1878. Applications.		1879. Applications.		1880. Applications.	
	Number of.	Area of.	Number of.	Area of.	Number of.	Area of.	Number of.	Area of.
		acres		acres		acres		acres
January	...	...	7	16	43	138	13	37
February.............................	2	5	10	15	28	139	5	18
March	2	6	3	4	29	107	7	21
April......	1	2	5	22	25	84	8	25
May...	3	9	24	91	24	83	...	...
June	1	3	23	59	23	96	5	21
July	...	...	15	49	13	43	5	9
August	9	34	27	85	9	24	3	8
September	4	13	41	122	8	24	2	7
October................................	16	48	22	65	4	11	2	6
November	6	24	27	86	4	16	1	3
December	15	46	34	142	10	26	1	5
Totals..................	59	190	238	756	220	791	52	160

SUMMARY of the above.

Year.	Number of Applications.	Area applied for.
1876	2	8
1877	59	190
1878	238	756
1879	220	791
1880	52	160
Grand Totals	571	1,905

In the above statement some of the applications are in point of fact re-applications for the same land; indeed most of the applications made during 1880 were of that character, and some few in previous years also.

Claims held under miners' rights.

As the foregoing statements *in re* the applications for gold-mining leases show, very few claims in this division are held under the Mining Board Regulations; not that the miner's right title is not considered to be safe, but because applicants for gold-mining leases are not compelled to work the ground applied for until the lease shall have been granted, while under the Mining Board Regulations work must be commenced within three days of the land being taken possession of and thenceforth efficiently worked, under penalty of forfeiture.

All the alluvial claims are held under the miner's right, but quartz holdings are with about three or four exceptions held under lease, and there are but few alluvial claims within this division.

On the 9th of February, 1880, a discovery of payable alluvium was reported by John Soars and party, in a small gully through which Tucker Creek runs, situate a few miles north of Cobark, and about 18 miles from Copeland. A small rush set in, and about twenty-five creek claims were registered. The extent of payable ground was however very limited, and the claims were abandoned nearly as fast as they were taken up. The prospectors and some half-dozen others have continued to work the ground, and the prospectors report that they are still making good wages, and it is reported that the district presents the general features of a reefing district, although up to the present time no quartz-workings have been reported.

In May 1880, Henry Saxby reported the discovery of payable alluvium on the banks of the Barrington River, about 3 miles above its junction with Boranel Creek, and a few claims were taken up but were all abandoned within a short time.

About a dozen men obtain a very precarious livelihood by washing the little points along the course of the Back Creek, and occasionally small patches of dirt, fairly rich, have been found, but taken on the whole the alluvium in this division has not shown much encouragement to the miners.

Quartz reefs.

As far as I am able to judge, the future of this division as a gold-producing district will depend upon quartz-mining, and in that respect there are good reasons for the belief that it will have a fairly prosperous future. There are said to be fifty-three distinct lodes already proven within the division, situate as follows:—

Right-hand branch	8
Left-hand branch (including the Mechanics, Prince Charlie, and Homeward Bound)	16
Bowman	10
Cobark	14
Kerriput	3
Boranel Creek	1
Gloucester River	1
Total...	53

The duties of my office have not allowed me to personally visit many of the localities named above; but from the best information that I have been able to gather, it is very likely that the further development of these lodes will prove that they are not all distinct lodes. However that might be, enough has been proven to show that the country extending for some 20 miles is fairly charged with a number of auriferous lodes that would pay handsomely if worked properly with system and economy.

Depression and some of its causes.—I have previously stated that there has been a large decrease in the number of our population, &c. This decrease caused a very serious depression in business generally. The very rich finds of gold obtained in 1877, 1878, and the early part of 1879 brought the division into great prominence before the public. A large number of persons were attracted to the district; the rich finds stimulated hope and expectation, and very extravagant opinions were formed as to the permanent richness of the reefs, and consequent prosperity of the district. A large demand for gold-mining leases set in, as will be seen by reference to the tables given above. In 1878 and 1879, 458 applications were made for an aggregate area of land amounting to 1,547 acres, against 111 applications for 350 acres in the years 1877 and 1880; but the fourteen months from May 1878 to June 1879, inclusive, show a greater comparative disparity in the rate of applications. In those fourteen months there were received 385 applications, representing 1,346 acres of land, that is to say, an area, if properly worked, sufficient to employ at least 2,000 miners. During the time that these applications were being made there was a large increase of population, but unfortunately the great bulk of the new comers were neither miners nor mining capitalists—they were chiefly speculators of the Micawber school. They marked out ground and applied for leases, hoping "something would turn up," but that "something" was to be turned up by the action of persons other than themselves, and one of the consequences was that large areas of land—the very eyes of the district—were locked up under application for lease, so that the real working miners who visited the district at the latter end of 1878 and the beginning of 1879 (and there were large numbers of them) found that the ground was pegged out in every direction, and that they could not get within anything like a reasonable distance of where gold was being obtained. They waited about from month to month, and still found the country locked up. At length, finding themselves blocked, they began to leave the district in disgust, because the ground which they would gladly have tested was being legally shepherded—and not worked—by persons who would not work it themselves nor allow other persons to do so. I do not think that at any one time there were more than from fifty to (say) seventy parties at *bona fide* work, and these parties were generally small parties of four to six miners in each party, and very few of these even were expert quartz-miners; many of them were coal-miners from the Newcastle district, and although they might possibly have been excellent coal-miners, many of them were certainly not excellent quartz-miners. It is no reflection upon a coal-miner as such to say that he is not a good quartz-miner, because these two branches of mining are totally dissimilar. And then the mines were managed on the "happy-go-lucky" principle—each miner was his own manager, so that in some mines there were half-a-dozen managers, with conflicting opinions and diverse modes of work, and as a natural consequence many good mines were not properly worked.

It should also be mentioned that nearly all the working miners were poor men, living from hand to mouth, so that in many cases where their past experience had taught them how a quartz mine should be worked and how to avail themselves of the natural advantages which the district offered, they could not for want of funds work their holdings properly. Every experienced quartz-miner knows that even in good remunerative quartz lodes, except in rare instances, there must be a large expenditure of labour and money before the mines can be expected to pay. Now, capital was never very freely offered to develop this gold-field, and unfortunately when it did offer the terms demanded by the holders of the land were such as to repulse rather than to attract capital. As I have previously hinted, the rich patches which had been discovered in some of these holdings caused their holders to put a price on them far beyond that which experienced men would give, and thus the miners were left to struggle on as best they could, and in numerous instances they had to succumb, sometimes without even obtaining a trial crushing, and in most instances without anything like a fair test being given to the mines. I might mention two cases to illustrate this part of my report. On the right-hand branch 108 ounces of gold were obtained from three small bucketfuls of quartz, and from a neighbouring mine nearly the same quantity of gold was obtained from less than two bucketfuls of quartz, besides other excellent prospects in both cases, and yet both these mines were abandoned and the leases have been cancelled.

In some instances there has been a fair amount of efficient work done, but the yields—as is often the case, even in good mines—fell off to an extent that disheartened the miners, and frequently the disappointment was all the greater because previously extravagant hopes had been indulged in.

The foregoing causes of depression, with others that I cannot now stop to mention, were culminating when the rush to Temora set in. That rush found a large proportion of our miners disappointed and discouraged. Many of them were in poor circumstances. They were, therefore, just ready for almost any change, when the great attractions of the new discoveries at Temora presented themselves, and the result was a large migration of the population from Copeland to Temora; this, with the exodus that had been slowly going on for several months previously, very naturally caused great depression in business generally.

I have thought it of special importance to point out some of the leading causes of the apparent decline of this district, because the depression does not in itself afford reasons for gloomy forebodings as to its future. The country for many miles round Copeland certainly contains in a high degree the elements of wealth. Possibly their development may be slow, and all the slower on account of past blunders, but it only requires capital and well-directed energy—mining and not shepherding—to give the district a solid and prosperous future.

HUNTER AND MACLEAY DISTRICT—DUNGOG DIVISION.

(*C. G. Smith, Mining Registrar.*)

I HAVE the honor to submit the following report on the workings in this division of the Gloucester gold-field during the year 1880.

1. In the Golden Spur Prospecting Claim, known also as the Dungog Co.'s Claim, at Little River, a shaft has been sunk to 120 feet, but no reef has been struck. In another shaft, at 70 feet, 50 tons returned 15 dwts. per ton, and a further crushing of 24 tons gave 1 oz. per ton. Four men employed; working appliances valued at £30.

2. Golden Spur, No. 1 West, Quinn and party, two men's ground. Reef struck at 30 feet from surface, and underlay to the north followed for 100 feet. At 70-feet level, 35 tons gave 50 ozs. amalgamated gold, and 70 tons returned 193 ozs. retorted gold. About 20 tons now at grass; worked by three men.

3. Adjoining Quinn and party on the west is Murphy and party's 3-acre lease. Shaft down 120 feet, at which level stone deemed payable. At the 70-feet level, 24 tons yielded 12 dwts. per ton. Stone appears to improve as they go down; two men at present employed.

4. Larkom's 5-acre lease, adjoining Murphy and party on the west. Down 70 feet; reef not yet cut.

5. Golden Spur, No. 1 East, Robertson and party, two men's ground. Reef followed from surface, 100 feet underlay to the north. 40 tons from 45 feet level gave 58 ounces. 120 tons at grass; two men at work.

6. Golden Spur, No. 2 East, Mowers and party. Shaft 85 feet; 58 tons surface stone gave 18 ozs. Sinking for reef at deeper level; two men at work.

7. Lloyd and party's 5-acre lease, adjoining Towers and party on the east; no work yet done.

8. Hidden Treasure, Buck and party, six men's ground, is distant about 200 feet from and parallel with the Golden Spur line. At 60 feet 56 tons yielded 178 ozs. 19 dwts. retorted gold. A tunnel is carried in over 100 feet, and reef struck. About 25 tons at grass; four men employed. Reef runs east and west, with underlay to the north; country very hard, differing from Golden Spur line, which is easily worked.

9. Murphy and party's 5-acre lease adjoins Buck and party. Shaft 60 feet without much result, but from situation of ground the holders are very sanguine of ultimate success; four men employed.

10. Golden Streak is some little distance due north from the Hidden Treasure. Reilly and party have a shaft down between 60 and 70 feet, with good stone. No crushing as yet, but about 10 tons at grass, expected to give from 2 to 3 ozs. per ton. North of Reilly and party two leases applied for but no work done.

11. Towns and party, on the Mountaineer line of reef at Marsh Creek, which is about 5 miles from the workings already noted and at a higher elevation, have a well-defined vein from 12 to 15 inches, showing gold freely. Two men at work, and some stone at grass.

12. Wilson and party, same line, obtained 23 ozs. from 37 cwt. sent to Mint, and have over 20 tons at grass, estimated to give 6 ozs. per ton.

13. Hart and party have 15 tons good stone ready for crushing, and other parties on this line (Mountaineer) have obtained good prospects. A site for machinery has been marked off, the cost of carriage to existing batteries being as high as 25s. per ton.

There are two crushing machines on the Little River. The Surprise, on the pneumatic principle, of two stampers, does not seem to give satisfaction to all; but the Enterprise, of ten stampers, worked by a water-wheel of 18 feet diameter, is in much favour, and is said to be capable of working twenty-five stampers. These crushing plants together have cost over £2,000.

Tailings, pyrites, &c., find their way at present to the river.

The population on the field, all told, is now about sixty, but will doubtless rapidly increase as the workings progress.

On Cherry-tree Creek, about 6 miles from Dungog, on the Stroud Road, fair prospects are being occasionally obtained from a reef about 10 inches wide, but there has not been much work done during the past year; it is probable, however, that the locality will be well tested this year.

The prospects of this division are undoubtedly improving. Work was greatly hindered for some time from want of machinery, the miners hesitating to go on until they could test their stone by putting through some tons; but now that the trials have proved the reefs to be payable work will go on steadily and more labour be employed. The width of the quartz at Little River runs from 5 to 6 inches to a foot, and there being abundance of water for motive power the machinery will have no difficulty in disposing of the increased output.

HUNTER AND MACLEAY DISTRICT.—WINGHAM DIVISION.

(*J. A. Creagh, Mining Registrar.*)

No satisfactory progress has been made in developing the mines in this district. The only gold obtained has been from broken patchy reefs or veins, which appear to run out when followed any depth. Some good stone (quartz) has been collected in a small quantity and crushed at the Mint, giving a rich yield (see Returns A B and C), but in no instance have the reefs paid for working, and have been generally abandoned. No other description of metal or mineral has been worked.

BERRIMA DISTRICT.

(*F. R. Wilshire, Mining Registrar.*)

WITH regard to the development of the mining interest in this district I have very little to add to my report for last year. The Kerosene Oil and Mineral Company at Joadja have considerably extended their important works and tramway, and the latter now reaches the Great Southern Railway line, with a siding near Mittagong Station, and large quantities of the shale and oil are being conveyed along it to market; small quantities of coal are also being sent away, and although several seams of this mineral exist on the Company's land at Joadja, none (with the exception of 7 or 8 inches, found and worked in conjunction with the kerosene shale deposit) have as yet proved workable or of much commercial value—tending to prove that the workable seams of coal in this district are neither extensive nor continuous.

The Berrima Coal-mining Company (Limited) have commenced operations at their mine, situate about 4 miles west of the town of Berrima. They are opening the mine, and making every preparation for the construction of a tramway (locomotive), and fully expect to have the coal in the market in the course of six months or so. The mineral is considered of excellent quality, having, I am informed, with others, taken 2nd award at the recent Garden Palace Exhibition.

The miners themselves state the coal to be as good as any in the Colony, though containing a little more ash than some of the best Newcastle.

Several parties during the past year have taken up land for coal-mining purposes at Hanging Rock, some 10 or 12 miles south of Berrima, and are I believe having adits driven into the seams at various places with a view of testing their value. The coal, I am informed, is more of a splint than bituminous nature; and through the seams are thick in some places, there is a doubt about both continuity and quality.

GRAFTON DISTRICT.

(*W. Clarke, Mining Registrar.*)

IN forwarding the annexed annual returns for my mining division, I have the honor to state that there has been scarcely any mining done during the past year. A few prospectors have been out, some in the direction of the coast, and others towards Cunglebung; but in other respects nothing has been done. The farmers and settlers are apparently too prosperous to be induced to prospect the district thoroughly.

A prospecting party has been sinking a shaft at Maclean and has out several fair seams of coal, the last one being the best; but, partly from the influx of water, and partly from the uncertainty of their being able to secure the land for which application has been made, on account of it being situated within the temporary Common, they have not pushed on the work as energetically as they might have done. The shaft is down about 100 feet, and is well timbered. I saw some of the coal obtained, and it burned freely, but appeared to be of recent formation.

ALBERT DISTRICT—WILCANNIA DIVISION.

(*W. A. Steel, Mining Registrar.*)

I BEG to state that I furnished all the information I have been able to collect to your department, on the 31st ultimo, which could not have reached you at the date of your letter.

I may add that I am still issuing a few miners' rights, but I believe the absence of water precludes much work being carried on until winter.

Gold.—Thirty men are on the ground at Mount Poole, Grey Ranges. Thompson and party are the only persons getting payable gold, other prospecting parties are getting the colour at 18 feet below surface. Water is distant some 300 yards from the place of operation. This drawback, together with want of sufficient food, the difficulty of forwarding supplies to such as are there, and the large tracts of waterless country to be crossed by gold-seekers, must materially interfere with the development of this field for some time.

Copper.—Mannering's Mootwingee Copper Mine employs four men; copper carbonate struck at 9½ feet, percentage analyzed 29½ per cent.; want of water prevents operation.

WARIALDA DISTRICT.

(*F. C. Macarthur, Mining Registrar.*)

THE only mining in this district is on the Pine Creek, near its junction with Reserve Creek, about 12 miles in a south-westerly direction from Warialda. Several leases were taken up for tin in this locality in 1872, but none were worked to any extent, and all were eventually abandoned. In August last, Miller and party of five took up a 20-acre lease. Since then two men have been at work there opening up the ground, but no payable tin has yet been struck, though I am informed the indications are good.

BURROWA DISTRICT.

(*W. J. E. Wotton, Mining Registrar.*)

IN submitting my annual report upon mining in this division, I regret to say that the progress of gold-mining has not been satisfactory during the past year. The Nil Desperandum quartz reef at Kenya, which reported payable gold last year, had to be abandoned for want of funds, although the prospectors are very sanguine as to the richness of the locality, and intend returning to the claim when they are in a position. Several miners' rights were taken out during the year, with the view of testing Kenyer and its vicinity; the counter attraction however of Temora took the miners all away, besides which the scarcity of water rendered mining operations very difficult.

A party of four with Melbourne capital have lately made a mineral conditional purchase of 40 acres, for the purpose of mining for lead and silver at Bookham in this division, and I am given to understand the prospects are very good.

With regard to the copper-mining, the working of the Frogmore (Deer Brothers) Mine was suspended during the greater part of the year; something over 50 tons in ingots was shipped to London—this was the only work for the year. I believe shortly the mine will again be in full swing, under fresh arrangements as to proprietary with Messrs. Deer. There is no doubt of the richness of the mine.

A mineral lease was taken up a short time since at Yundoo in this division, and I hear of others to be taken up shortly for copper.

COAL AND SHALE.

Table compiled from Reports furnished by the owners of Collieries, showing the quantity and value of Coal and Shale won during the year 1880, and the number of Miners employed in the Collieries.

Company.	Locality.	Miners employed.			Quantity.			Value.			Remarks.
		Above ground.	Under-ground.	Total.	Tons	c.	qr.	£	s.	d.	
COAL.											
Australian Agricultural Co.	Newcastle	93	605	698	169,497	0	0	78,428	11	1	
Newcastle Coal-mining Co.	,,	41	232	273	104,135	0	0	40,266	9	7	
Waratah	,,	1	8	9	3,664	4	0	1,414	9	0	
South Waratah	,,	45	182	227	59,111	19	0	21,878	16	9	
Newcastle Wallsend	,,	90	560	650	146,796	0	0	62,813	0	0	
Co-operative	,,	48	386	434	* 122,827	0	0	* 57,947	0	0	* 1,675 tons coke, value, £2,931.
Lambton	,,	56	397	453	239,234	0	0	† 107,655	6	0	
New Lambton	,,	30	155	185	43,810	0	0	25,500	0	0	
Duckenfield	,,	10	60	70	16,215	0	0	† 8,107	10	0	
Browns	,,	23	200	223	55,581	0	0	2,779	10	0	
Redhead	,,	....	....	....	....			....			Not at work.
Goose Colliery	,,	2	2	4	1,000	0	0	400	0	0	
Ferndale	,,	21	112	133	52,093	0	0	† 26,046	10	0	
No. 2 Ferndale	,,	1	2	3	2,000	0	0	550	0	0	
Alnwick	,,	11	30	41	14,149	0	0	4,753	0	0	
Tighe's Hill	,,	1	5	6	878	0	0	267	9	0	
Glenrock	,,	....	....	....	....			....			Not at work.
Messrs. Wassell, Wright, and Hopkins.	,,	1	2	3	250	0	0	75	0	0	
Thornby Colliery	Four-mile Creek	2	5	7	6,069	0	0	557	5	0	
Sunderland	,,	2	2	4	1,050	0	0	380	0	0	
Anvil Creek	,,	8	23	31	....			....			Opening out new mine.
Mount Enterprise	,,	2	2	4	250	0	0	62	10	0	
Bloomfield (Mitchell's)	,,	3	5	8	2,500	0	0	1,250	0	0	
Greta	Maitland	21	116	137	20,751	0	0	10,255	10	0	
Rathluba	,,	4	25	29	9,956	0	0	4,480	4	0	
Rix's Creek	Singleton	1	1	2	392	0	0	273	9	0	
Singleton Coal-mining Co.	,,	10	9	19	3,971	6	0	2,376	7	11	
Longworth's Mine. (Ellsmere)	,,	2	16	18	2,390	0	0	710	17	6	
Belford Colliery	Macquarie	....	....	....	....			....			Not at work.
Morrisett Point	,,	....	2	2	139	0	0	69	10	0	
Parbury, Lamb & Co.	,,	....	....	....	....			....			Merely exposed.
New Wallsend	,,	....	....	....	....			....			Not at work.
Bellevue	,,	2	4	6	300	0	0	75	0	0	Only worked about one day per week.
		531	3,148	3,679	1,079,009	9	0	459,373	4	10	
Bulli	Illawarra	116	215	331	96,071	0	0	57,642	12	0	
Illawarra	Mount Pleasant	47	119	166	58,699	0	0	22,262	8	0	
Osborne Wallsend	Mount Kiera	33	103	136	33,996	0	0	13,200	0	0	
Coal Cliff	Illawarra	28	110	138	51,445	0	0	20,578	0	0	
Nattai Coal Co.	....	....	....	....	....			....			Not at work.
Berrima Coal Co.	....	....	....	....	....			....			Mining operations not yet commenced.
Mount Kembla Coal and Oil Co.	Mount Kembla	20	16	36	....			....			Opening up of seams.
		244	563	807	240,211	0	0	113,683	0	0	
Lithgow Valley	Hartley	4	50	54	45,682	0	0	12,704	1	9	
Eskbank	,,	8	58	66	50,678	0	0	13,613	15	0	
Bowenfels	,,	3	6	9	6,100	0	0	1,812	10	0	
Vale of Clwydd	,,	10	25	35	44,000	0	0	14,000	0	0	
Cooerwell's	,,	....	1	1	500	0	0	150	0	0	
Katoomba Coal Co.	Katoomba	....	....	....	....			....			Works in course of preparation.
		25	140	165	146,960	0	0	52,280	6	9	
SHALE.											
N. S. W. Shale and Oil Co.	Hartley Vale	24	32	56	6,090	0	0	15,225	0	0	
Australian Kerosene Oil and Mineral Co.	Joadja Creek	70	70	140	13,111	0	0	29,499	15	0	
		94	102	196	19,201	0	0	44,724	15	0	

† Value estimated.

REPORT OF THE EXAMINER OF COAL-FIELDS FOR THE COLONY OF NEW SOUTH WALES, FOR THE YEAR 1880.

In accordance with the provisions contained in the 26th section of the Coal Mines Regulation Act, 39 Vic. No. 31, I have the honor to submit a report from the Inspector of Collieries with this my general report for the half-year ending 31st December, 1880.

The Inspector's for the half-year ending 30th June last, with my general report for the same period, was transmitted to you on the 19th July last.

The information I have the honor to submit in respect to the condition and progress, &c., of the various coal and boghead mineral mines under my supervision during the year 1880 is as follows :—

Accidents in 1880.

The following are abridged reports of the fatal accidents which have been examined into and reported upon by me during the year.

Fatal accident—fall of coal.

On 24th March I reported that an accident happened through a fall of coal on the 2nd idem to an experienced miner named Henry Whitton, at the Bulli Colliery, from the effects of which he died whilst being carried out of the mine. That I examined the scene of accident, attended an adjourned inquest, at which the finding of the Jury was "That Henry Whitton, being seriously wounded by a fall of coal on the 2nd March instant in the Bulli coal mine, met with his death by coming in contact with foul and impure air on his way out of the mine." I also reported that from an examination of the scene of accident, the air in bord, return and intake air (the latter being about ¼ of a mile of fresh air from the mouth of the tunnel), I was of opinion the deceased met with his death accidentally, through coal falling upon his head and the probable nervous shock to his system, and not from foul and impure air as stated by the Jury : the latter opinion and verdict being in direct opposition to the evidence given, and my careful examination of that part of the mine where the accident happened and the ¾ of a mile of return and intake air through which he was carried to the tunnel mouth. The Coroner several times asked the Jury to reconsider their verdict, as it was not in accordance with the evidence, but they refused. I further reported that I quite agreed with the mate of the deceased, that no blame can be attached to any one in connection with the mine.

Fatal accident—fall of coal.

On 20th July I reported that an experienced miner named Henry Roberts was killed by a fall of coal at the Co-operative Colliery on the 19th idem. That I examined the bord where deceased was working when the accident happened and attended the inquest, and from the examination and evidence taken it appeared that the deceased was undercutting about 6 feet in length of a "back end on" at the left-hand side of his bord, and while so doing the undercut coal, spragged at the loose end, fell down sooner than he expected, in consequence of its having a "sooty-facing," intersected on the rib-side by a "grey-back." His mate (James Collins) sworn, stated it was the first time he had worked in that bord, and that at about ten minutes past 8 a.m. he went into the bord and looked round for the deceased; saw his bottle, but could not see him. On going up to the face saw the deceased with a lump of coal on him, and to all appearance dead. That he ran into Chapman's bord, crying out there was a man dead; Chapman accompanied him back to the deceased, and assisted to lift the coal off him—he appeared quite lifeless and almost cold. With the assistance of others he was put into a skip and brought out of the mine; there was about 1 ton of coal down from the work deceased did that morning, &c., &c. That he, as a practical miner, would not have anticipated the coal falling in so sudden a manner; they always had plenty of sprags supplied them, and there were plenty in the bord. If he had been similarly placed he did not think he could have made the place more secure, and in his opinion the occurrence was purely accidental.

The Jury returned the following verdict,—"That Henry Roberts came to his death by an accidental fall of coal," which I fully coincide with.

Fatal accident—fall of coal.

On 16th September I reported that an experienced miner named James Mitchell was killed by a fall of coal at Newcastle Wallsend Colliery on the 14th idem. That I examined the bord where the accident happened and attended the inquiry held on 15th September, and from the examination and evidence given it appeared that while the deceased was filling a skip with coal, about 3 tons of "big-tops," 2 feet 3 inches in thickness, which his mate had about twenty minutes before cut to a facing on the rib side, unexpectedly fell down, ¾ of a ton of coal falling upon his back and lower part of body, and some upon his legs and feet. His mate (William Dowson) sworn, stated he worked in the same bord, and that on the day the accident happened they had been taking some top coal down, which was cut on one side to a facing in the coal where a "grey-back" ran in, and the heavy end of the coal being in the middle of the way it canted the sprags out, and about ¾ of a ton of coal fell on the deceased, &c. Had been working the "big-tops" for the last two days and in the bord for the last three months, and never anticipated any danger, the place being as they thought securely timbered. He considered the "grey-back" was the cause of the accident. Did not require extra timber, and if they had there was plenty lying in the bord, and he considered no blame attributable to the manager, &c. The following verdict was returned,—"The deceased, James Mitchell, was accidentally killed by a fall of coal whilst holing in the Wallsend Company's new tunnel, and we consider that no blame is attributable to any person," which I fully concur in.

Fatal accident through being run over by empty waggons on the Bulli Company's incline plane.

On 20th November I reported an accident occurred on the 4th idem, to a watchman named James Taylor, at the Bulli Company's incline, from the effects of which he died soon after he reached home. That I attended an adjourned inquest on the 11th November, having previously gone with the manager to the place where the accident happened; and from the evidence given it appeared that William Roff, a miner, working at the colliery, saw Taylor last alive about 3 p.m. on the 4th idem. He was then going up the incline and walking between the rails, when Roff called to him and he stepped on the side where the empty waggons were then coming down and meeting him. He appeared to take no notice of his again and again calling to him, and he was knocked down by the empties, &c., &c. The verdict of the Jury was:—"The deceased, James Taylor, was accidentally killed by some empty waggons running over him whilst walking up the incline to his employment as night watchman." In my cross-examination of two witnesses employed at the mine, they said they would consider it a hardship if they were prevented from walking up the incline to their work; that the deceased was about sixty years of age, and an active, sober man, &c. I also reported that I was of opinion the deceased met with his death accidentally, and no blame was attributable to the owners or managers of the mine.

Fatal accident—fall of coal.

On 25th November I reported that an experienced miner, named James Dorrity, was killed by a fall of coal at the Lambton Colliery on the 23rd idem. That I examined the scene of the accident and attended the inquest, and, from the examination made, it appeared the deceased met with his death through a "grey-back," which it was impossible for him to see, putting in at the face of the coal he was holing under, and I considered no blame was attributable to the managers of the mine, &c. The evidence given by James Harrison, a miner working in the next bord to deceased, was that at about 5·40 a.m. on 23rd November, hearing a noise as of coal falling, and also a voice calling out Jim! oh, Jim! he ran to the heading and called for assistance, and he and others went to Dorrity's bord and found him lying under a heap of coal which covered all but his head. That they removed the coal lying on him, and took him out of the mine. He had known deceased about eight years; he was a practical miner, about forty-eight years of age, and a very steady, sober man, &c. He had seen the place where the accident occurred, and considered every precaution had been taken to prevent it, and in his opinion plenty of sprags had been used. That a "grey-back" had appeared, the existence of which the deceased had no knowledge of, and if he had been working in the bord he should not have used more sprags, and there was no difficulty in obtaining them, &c. He also said he considered there was no blame attributable to the manager, and the accident might have happened to himself or any other miner, &c. The Jury returned the following verdict:—"That James Dorrity was accidentally killed by a fall of coal in the Lambton pit."

In the year just ended, 1880, there were eight fatal and nineteen non-fatal accidents, all of which have been inquired into, the scene of the accidents examined, inquests attended, and full reports made thereon. The names and occupations of the persons who died from injuries received, and those who were seriously injured, as well as the names of the collieries, are as follows:—

Fatal accidents—lives lost.

The first happened to a miner named Henry Whitton, who was killed by a fall of coal at the Bulli Colliery, near Wollongong; the second to a miner named Thomas Campbell, who was killed by a fall of stone from the roof of the mine at South Waratah Colliery, near Newcastle; the third to a miner named Henry Roberts, who was killed by a fall of coal at Co-operative Colliery, near Newcastle; the fourth to a man named James Mitchell, who was killed by a fall of coal at the Wallsend Colliery, near Newcastle; the fifth to a labourer named Thomas Allum, who was run over by coal-waggons on the Osborne Wallsend Colliery incline, near Wollongong; sixth to a watchman named James Taylor, who was run over by empty waggons on the Bulli Colliery Company's incline, near Wollongong; the seventh to a miner named James Dorrity, who was killed by a fall of coal at the Lambton Colliery, near Newcastle; and the eighth to a labourer named John Roach, was crushed between waggons at the A. A. Company's Borehole pit, near Newcastle.

Non-fatal accidents.

The first happened to a shifter named Robert Bates, who had his thigh fractured through a fall of coal at the A. A. Company's Borehole pit, near Newcastle; the second and third to a locomotive engine-driver named George Fryar, and James Gilbert, a hooker-on, who were jerked off the skips which were ascending the New South Wales Shale and Oil Company's incline, near Hartley, and sustained slight injuries; the fourth to a miner named Edward Rowles, who had his leg fractured by a fall of coal, at Osborne Wallsend Colliery, near Wollongong; the fifth to a miner named George Wilson, who sustained severe injuries about hips and loins through a fall of coal at Brown's Colliery, Minmi; the sixth to a miner named J. Williams, who had his leg fractured by a fall of coal at the Newcastle Coal-mining Company's Colliery, Glebe, near Newcastle; the seventh to a boy named Edward Spence, who sustained severe flesh wounds through being caught and dragged by a loaded set at the Lambton Colliery incline plane, near Newcastle; the eighth to a boy, named Geo. Sangster, driving horses, and who sustained severe injuries to leg and abdomen at South Waratah Colliery, Raspberry Gully, near Newcastle; the ninth to a wheeler named William Henderson, who had his arm fractured through coal falling from a skip at the A. A. Company's pit, near Newcastle; the tenth to a miner named Thomas Graham, who received serious bruises on his head, &c., by some blasting-powder exploding, at the Newcastle Coal-mining Company's Colliery, near Newcastle; the eleventh to a miner named Thomas Ramsay, who had his leg fractured by a fall of coal at the Wallsend Colliery, near Newcastle; the twelfth to a miner named John Marshall, who had his leg broken by a fall of coal at the Lambton Colliery, near Newcastle; the thirteenth to a contractor and sinker, named Robt. Johnson, whose head was seriously injured by a tub falling down a pit in course of sinking, on E. C. Merewether, Esq's., property at Little Red Head, near Newcastle; the fourteenth to a miner named James Devon, who received serious injuries from a fall of coal at the Co-operative Colliery, near Newcastle; the fifteenth to a horse-driver named Carr, whose arm was seriously injured though being run over by empty coal skips at the Wallsend Colliery, near Newcastle; the sixteenth to a miner named Henry Short, who had his leg fractured by a fall of coal at South Waratah Colliery, Raspberry Gully, near Newcastle; the seventeenth to a miner named Alexander Stewart, who received severe bruises on abdomen and back through a fall of coal at the A. A. Company's Borehole pit near Newcastle; the eighteenth to a miner named John Rushton, who had his leg broken by a fall of coal at the New Lambton Colliery, near Newcastle; and nineteenth to a miner named John Cork, who had his leg broken by a fall of coal at Ferndale Colliery, near Newcastle.

Number of accidents in 1879 *and* 1880.

The number of fatal accidents in the year just ended, 1880, exceeds those of the previous year by three, the number of non-fatal accidents being the same as in 1879. In the year ending 31st December, 1879, there were five fatal and nineteen non-fatal accidents.

Two of the five fatal accidents happened from falls of coal; the third through losing power over a break and being thrown out of a waggon; the fourth by a fall of roof, and the fifth by a crush taking place unexpectedly at the Wallsend Colliery.

Ten of the nineteen non-fatal accidents occurred from falls of coal, the eleventh by getting jammed between a coal-skip and the unwrought coal; the twelfth through being crushed between a coal-skip and prop; the thirteenth and fourteenth through an explosion of gas; the fifteenth and sixteenth by being crushed between skips and the side of the incline plane; the seventeenth through being hit by a stone from a shot-hole; the eighteenth whilst in the act of coupling a skip, and the nineteenth through slipping off the bumper of a loaded waggon.

Summary showing the number of fatal and non-fatal accidents in 1880, names and occupations of the persons who died or were injured, cause of death or serious injury, and the names of the Collieries where they occurred.

Number of accidents.	Date.	Name of Colliery.	Where situate.	Persons killed.	Persons seriously injured.	Occupation.	Cause of death or serious injury.	Lives lost.				Non-fatal accidents.					
								Fall of coal.	Fall of stone (roof).	Run over by waggons.	Crushed by waggons.	Fall of coal.	Thrown off skips and run over.	Dragged by loaded set.	Severely cut whilst horse-driving.	Explosion of powder.	Tub falling down pit.
	Jan. 3	Australian Agrict. Co.	Newcastle	....	Robert Bates ..	Shifter	Thigh fractured by a fall of coal	..	..	..	..	1	..	..	..	..	..
2	,, 5	N. S. Wales Shale Oil.	Hartley	....	George Fryer ..	Locomotive engine driver	Injury to feet through being jerked off skips.	..	..	..	..	..	1	..	..	..	..
3	,, 5	N. S. Wales Shale Oil.	,, ...	....	James Gilbert ..	Hooker on and off	Thrown under skip and slightly injured.	..	..	..	..	..	1	..	..	..	..
4	Mar. 2	Bulli	near Wollongong ..	Henry Whitton	....	Miner	Killed by a fall of coal	1	..	..	..	..	..	..	..	..	..
5	April 7	Osborne Wallsend.	,, ,, ...	....	Edwd. Rowles ...	Miner	Leg fractured by fall of coal	..	..	..	..	1	..	..	..	..	..
6	,, 15	Brown's Colliery	Minmi	....	George Wilson ..	Miner	Severe injuries to hips and loins through a fall of coal.	..	..	..	..	1	..	..	..	..	..
7	20	Glebe Colliery ..	near Newcastle	....	J. Williams	Miner	Leg fractured by a fall of coal....	..	..	..	..	1	..	..	..	..	..
8	May 13	South Waratah Colliery.	near Charlestown ...	Thos. Campbell	....	Miner	Killed by a fall of stone from the roof.	..	1	..	..	..	..	..	..	..	..
9	,, 14	Lambton	near Newcastle	....	Edward Spence	A greaser	Severe fleshwounds through being dragged by a loaded set.	..	..	..	..	..	..	1	..	..	..
10	,, 18	South Waratah	near Charlestown ..	....	Geo. Sangster ..	Horse-driver....	Severely cut on leg, &c., whilst horse-driving.	..	..	..	..	..	..	..	1	..	..
11	June 21	Australian Agrict. Co. ..	near Newcastle	....	Wm. Henderson	Wheeler........	Arm fractured through coal falling from a skip.	..	..	..	..	1	..	..	..	..	..
12	,, ,,	Newcastle Coal Co.	,, ,, ...	....	Thos. Graham ..	Miner	Serious injuries to head by powder exploding.	..	..	..	..	..	..	..	..	1	..
13	July 19	Co-operative ..	Platsburgh	Henry Roberts	....	Miner	Killed by a fall of coal	1	..	..	..	..	..	..	..	..	..
14	,, 23	Wallsend Col...	Wallsend	....	Thos. Ramsay ...	Miner	Leg fractured by fall of coal	..	..	..	..	1	..	..	..	..	..
15	,, 30	Lambton	near Newcastle	....	John Marshall...	Miner	do do	..	..	..	..	1	..	..	..	..	..
16	Aug. 6	Little Redhead...	,, ,, ...	....	Robt. Johnson..	Sinker	Head severely injured by tub falling down pit.	..	..	..	..	..	..	..	..	..	1
17	,, 23	Co-operative....	Platsburgh	....	James Devon ..	Miner	Serious injuries from fall of coal	..	..	..	..	1	..	..	..	..	..
18	,, 24	Wallsend Col...	Wallsend	....	— Carr	Horse-driver....	Arm mutilated through being run over by skips.	..	..	..	..	..	1	..	..	..	..
19	Sept. 14	,, ,, ..	,, ...	James Mitchell	....	Miner	Killed by a fall of coal	1	..	..	..	..	..	..	..	..	..
20	,, 24	Osborne Wallsend.	near Wollongong ..	Thos. Allum....	....	Labourer	Run over by coal waggons on incline	..	..	1	..	..	..	..	..	..	..
21	Nov. 4	Bulli	,, ...	James Taylor ..	....	Watchman	Run over by coal waggons on incline.	..	..	1	..	..	..	..	..	..	..
22	,, 6	South Waratah	near Charlestown ..	....	Henry Short....	Miner	Leg fractured by fall of coal	..	..	..	..	..	1	..	..	..	..
23	,, 10	Australian Agricultural.	near Newcastle	....	Alex. Stewart ..	Miner	Serious injuries to back, &c., by fall of coal.	..	..	..	..	..	1	..	..	..	..
24	,, 25	Lambton	,, ,, ...	James Dorrity..	....	Miner	Killed by a fall of coal	1	..	..	..	..	..	..	..	..	..
25	Dec. 2	New Lambton..	,, ,, ...	....	John Rushton ..	Miner	Leg fractured by fall of coal	..	..	..	..	..	1	..	..	..	..
26	,, 7	Ferndale	,, ,, ...	....	John Cork......	Miner	do do	..	..	..	..	..	1	..	..	..	..
27	,, 28	Australian Agricultural.	,, ,, ...	John Roach	....	Labourer	Killed through being crushed between waggons.	..	..	..	1	..	..	..	..	..	..
								4	1	2	1	8	7	1	1	1	1

The returns which have been collected and forwarded to me by the Mining Department show the following figures for the year 1880 :—

COAL RETURN.

	Northern District.	Southern District.	Western District.	Total.
Tons of round and small coal raised	1,079,009	240,211	146,960	1,466,180
Value of round and small coal raised	£459,373 4s. 10d.	£113,683	£52,280 6s. 9d.	£625,336 11s. 7d.
Persons employed above-ground ...	531	244	25	800
Persons employed underground ...	3,148	563	165	3,876

PETROLEUM OIL CANNEL COAL OR BOGHEAD MINERAL RETURN.

WESTERN AND SOUTHERN DISTRICTS.

Tons of boghead mineral or petroleum oil cannel coal raised	19,201
Value of boghead mineral or petroleum oil cannel coal raised	£44,724 15s.
Persons employed above-ground	94
Persons employed underground	102

NORTHERN DISTRICT.

Comparative Statement of Returns for 1879–80.

	Men above-ground.	Men under-ground.	Tons of round and small coal raised.	Value.		
				£	s.	d.
Australian Agricultural, Co-operative, Newcastle, Wallsend, Waratah, New Lambton, Lambton, Brown's, Duckenfield, Ferndale, Newcastle Coal, Alnwick, Goose, No. 2 Ferndale, Wassell, Wright & Hopkins, Tighe's Hill, Greta, Thornby, Sunderland, Rathluba, Mount Enterprise, Bloomfield, Singleton Company, Rix's Creek, Longworth's, Morrisett & Bellevue	531	3,148	1,079,009	459,373	4	10
Total in 1880..................	531	3,148	1,079,009	459,373	4	10
,, 1879......	573	3,429	1,196,621	761,616	16	4
Decrease in 1880	42	281	117,612	302,243	11	6

SOUTHERN DISTRICT.

Comparative Statement of Returns for 1879–80.

	Men above-ground.	Men under-ground.	Tons of round and small coal raised.	Value.
				£
Bulli, Coal Cliff, Illawarra Coal, and Osborne Wallsend Colliery.	224	547	240,211	113,683
Total in 1880..................	224	547	240,211	113,683
,, 1879..................	239	636	267,018	154,235
Decrease in 1880	15	89	26,807	4,5520

WESTERN DISTRICT.

Comparative Statement of Returns for 1879–80.

	Men above ground.	Men under ground.	Tons of round and small coal raised.	Value.
				£ s. d.
Eskbank, Lithgow Valley, Vale of Clwydd, Bowenfels, and Coerwull Collieries	25	140	146,960	52,280 6 9
Total in 1880	25	140	146,960	52,280 6 9
„ 1879	19	139	120,041	35,172 0 0
Increase in 1880	6	1	26,929	17,108 6 9

THE following table shows comparisons between the year under notice and two preceding years, as sumption, total output and value, tons of round and small coal raised for each person employed in quantity of coal raised for life lost.

Years.	Exports to Intercolonial Ports.			Exports to Foreign Ports.			Total Exports.			Home Consumption.
	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.	
	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.
1878..........................	623,323	0 13 8·77	427,954	383,097	0 14 7·72	280,452	1,006,420	0 14 0·93	708,406	569,077
1879..........................	621,087	0 13 6·75	421,198	376,962	0 14 6·18	278,509	998,049	0 13 11·04	694,707	585,331
1880..........................	550,672	0 11 2·67	309,004	202,684	0 11 5·76	116,295	753,356	0 11 3·5	425,299	712,824
	1,795,082	0 12 10·08	1,158,156	962,743	0 13 6·53	670,256	2,757,825	0 13 1·15	1,828,412	1,867,232

From the above we find that in the year 1880 we exported 70,415 tons less coal to intercolonial ports than in the preceding year and 174,278 tons less to foreign ports. The intercolonial decrease during the year appears to be principally owing to New Zealand having again taken larger supplies of coal from her Bay of Islands and Greymouth Collieries, which have during the last few years been much more extensively worked; thus in 1878, 181,824 tons of coal were shipped from Newcastle to New Zealand; in 1879, 173,699 tons, whilst in 1880 there were only 123,220 tons sent there. The total exports were in 1879 8,371 tons less than in 1878, and this year 1880 they are 244,693 tons less, which is no doubt primarily owing to vessels having better engagements than carrying coal away from New South Wales. The total output for the year under notice is 117,200 tons less than in 1879. It will also be seen that the quantity of coal raised during the last three years for each person employed above and under ground at the collieries has averaged 318 tons of round and small coal per year, and that each person so employed added £171 11s. 9d. per annum to the wealth of the Colony.

In the years 1878, 1879, and 1880, twenty-one lives were lost for 4,625,057 tons of coal raised—that is, 232,295 tons were raised for each life lost.

These figures may perhaps be sufficiently explanatory in themselves, so far as a comparison of our export trade and home consumption, &c., for the whole Colony is concerned; but it will no doubt be interesting for each district to know the proportion the accidents and deaths bear to the persons employed, and the quantity and value of coal raised for each person employed in and about the mines, &c., which is as follows:—

From these returns we find that in the Northern district, in the year under notice, there has been a decrease in the quantity of coal raised to the extent of 117,612 tons, and in the value of £302,243 11s. 6d. In the Southern district a decrease of 26,807 tons in the quantity raised, and in the value of £40,552; whilst in the Western district their yield has increased 26,929 tons, valued at £17,108 6s. 9d.

The reduction in the price of coal at Newcastle from 14s. in 1879 to 10s. and 7s. 6d. in 1880, accounts for the large decrease in the value of coal raised there and in the south.

In the Western district there appears to have been an increase in the selling price of coal raised.

regards the exports of coal to foreign and intercolonial ports, the quantity used for home con-
and about the collieries, value of round and small coal raised for each person so employed, and the

Total Output and Value.			Coal raised per each person employed in and about the Mines.			Value of Coal raised per each person employed in and about the Mines.			Tons of Coal raised per life lost.		
Quantity.	Average per ton.	Value.	Quantity.	Average tons per each person employed.	Persons employed.	Value.	Average value per each person employed.	Persons employed.	Quantity.	Average tons per each life lost.	Lives lost.
Tons	£ s. d.	£ s. d.	Tons	Tons	Number	£	£ s. d.	Number	Tons	Tons	Number
1,575,497	0 11 8·23	920,936 7 4	1,575,497	328	4,792	920,936	192 3 8	4,792	1,575,497	196,937	8
1,583,380	0 12 0·12	950,878 18 3	1,583,380	314	5,035	950,878	188 17 0	5,035	1,583,380	316,676	5
1,466,180	0 8 6·36	625,336 11 7	1,466,180	313	4,676	625,336	133 14 8	4,676	1,466,180	183,272	8
4,625,057	0 10 8·92	2,497,151 17 2	4,625,057	318	14,503	2,497,150	171 11 9	14,503	4,625,057	232,295	21

Northern District.

Number of persons employed in and about the mines	3,679
Number of persons employed underground	3,148
Quantity of coal raised in tons	1,079,009
Number of non-fatal accidents	16
Number of lives lost by accidents	5
Persons employed per each non-fatal accident	229
Persons employed per each life lost	736
Tons of round and small coal raised per each non-fatal accident	67,438
Tons of round and small coal raised per each life lost	215,802
Tons of coal raised per each person employed in and about the mines	293
Tons of coal raised per each person employed underground	342
Value of coal raised	£459,373 4 10
Value of coal raised per each person employed in and about the mines	124 17 3
Value of coal raised per each person employed underground	145 18 6

Southern District.

Number of persons employed in and about the mines	807
Number of persons employed underground	563
Quantity of coal raised in tons	240,211
Number of non-fatal accidents	1
Number of lives lost by accidents	3

Persons employed per each non-fatal accident	807
Persons employed per each life lost	269
Tons of round and small coal raised per each non-fatal accident	240,211
Tons of round and small coal raised per each life lost	80,070
Tons of coal raised per each person employed in and about the mines	298
Tons of coal raised per each person employed underground	426
Value of coal raised	£113,683 0 0
Value of coal raised per each person employed in and about the mines ...	140 17 5
Value of coal raised per each person employed underground	201 18 5

Western District.

Number of persons employed in and about the mines	165
Number of persons employed underground	140
Quantity of coal raised in tons	146,960
Number of non-fatal accidents	2
Number of lives lost by accident	Nil
Persons employed per each non-fatal accident	82
Persons employed per each life lost	No lives lost.
Tons of round and small coal raised per each non-fatal accident	73,480
Tons of round and small coal raised per each life lost	146,960 tons raised without a life lost.
Tons of coal raised per each person employed in and about the mines...	890
Tons of coal raised per each person employed underground	1,049
Value of coal raised	£52,280 6 9
Value of coal raised per each person employed in and about the mines ...	316 17 0
Value of coal raised per each person employed underground	373 8 7

The following table shows comparisons between the year under notice and the preceding year, as regards the proportion the accidents and deaths bear to the persons employed, the quantity and value of coal raised for each person employed in and about the mines and underground, in the Northern, Southern, and Western districts.

	Northern District.		Southern District.		Western District.	
	1879.	1880.	1879.	1880.	1879.	1880.
Number of persons employed in and about the mines.	4,002	3,679	875	807	158	165
Number of persons employed underground	3,429	3,148	636	563	139	140
Quantity of coal raised in tons	1,196,321	1,079,009	267,018	240,211	120,041	146,960
Number of non-fatal accidents	15	16	4	1	nil	2
Number of lives lost by accidents	3	5	2	3	nil	nil
Persons employed for each non-fatal accident.	266	229	219	807	No accident.	82
Persons employed for each life lost	1,334	736	437	269	No life lost.	No life lost.
Tons of round and small coal raised per each non-fatal accident.	79,754	67,438	66,754	240,211	120,041 tons raised without an accident.	73,480
Tons of round and small coal raised per each life lost.	398,773	215,802	133,509	80,070	120,041 tons raised without a life lost.	146,960
Tons of coal raised per each person employed in and about the mines.	291	293	305	298	760	890
Tons of coal raised per each person employed in and underground.	348	342	420	426	863	1,049
	£ s. d	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Value of coal raised	761,471 16 4	459,373 4 10	154,235 0 0	113,683 0 0	35,172 0 0	52,280 6 9
Value of coal raised per each person employed in and about the mines.	190 5 5	124 17 2	176 5 4	140 17 5	222 12 1	316 17 0
Value of coal raised per each person employed underground.	222 1 4	145 18 6	242 10 1	201 18 5	253 0 8	373 8 7

THE following statistical return furnished me by Mr. W. R. Logan, the Collector of Customs, Newcastle, shows that the only increases of any consequence in the export of coal from this port have been to Hong Kong 9,576 tons, and Portland O. 2,860 tons; and that the greatest decreases have been: India, 64,332 tons; New Zealand, 50,479 tons; San Francisco, 13,149 tons; Java, 9,970 tons; Manila, 9,521 tons; Mauritius, 6,688 tons; and Callao, 4,223 tons.

New South Wales—Port of Newcastle—Export of coal.

To Foreign and Intercolonial Ports.	1879.	1880.	Increase during 1880.	Decrease during 1880.
	Tons	Tons	Tons	Tons
Victoria	275,978	276,847	869	....
New Zealand	173,699	123,220	....	50,479
South Australia	99,638	92,862	....	6,776
Tasmania	24,597	18,637	....	5,960
Queensland	11,246	7,261	....	3,985
Western Australia	1,946	2,678	732	....
Japan	15,104	7,097	....	8,007
San Francisco	56,640	43,491	....	13,149
Hong Kong	36,559	46,135	9,576	....
Manila	16,822	7,301	....	9,521
India	76,271	11,939	....	64,332
Java	19,610	9,640	....	9,970
China	8,928	8,533	....	395
Mauritius	9,271	2,583	....	6,688
New Caledonia	3,273	2,585	....	688
Valparaiso	3,312	....	....	3,312
Guam	3,839	....	....	3,839
Port Natal	2,420	....	....	2,420
Petropolovski	934	....	....	934
Callao	5,303	1,080	....	4,223
Sourabaya	3,858	....	....	3,858
Portland O.	2,570	5,430	2,860	....
Arica	1,053	....	....	1,053
Guyagnel	1,077	....	....	1,077
Honolulu	3,588	1,674	....	1,914
Bankok	550	787	237	....
La Plata	502	....	....	502
Tahiti	260	....	....	260
Ilo Ilo	499	828	329	....
South Sea Islands	540	....	....	540
Mexico	....	1,000	1,000	....
Fiji	488	1,785	1,297	....
	860,375	673,393	16,900	203,882

DECENNIAL RETURN—Port of Newcastle—Foreign and Intercolonial Trade.

Year.	Entered inwards from Foreign and Intercolonial Ports.		Cleared outwards for Foreign and Intercolonial Ports.		Total value of Imports from Foreign and Intercolonial Ports.			Quantity and value of Coal exported to Foreign and Intercolonial Ports.				Total value of Exports (including Coal) to Foreign and Intercolonial Ports.			Total amount of Revenue collected.		
	No. of Vessels.	Tonnage.	No. of Vessels.	Tonnage.				Tons.	Value.								
					£	s.	d.		£	s.	d.	£	s.	d.	£	s.	d.
1871	743	277,959	1,040	376,378	203,168	2	7	489,714	208,833	9	0	236,683	9	3	26,590	1	9
1872	876	342,514	1,092	427,845	268,141	12	11	565,994	243,911	18	0	282,834	9	10	41,196	9	8
1873	978	389,121	1,259	498,468	310,101	11	11	650,899	412,631	5	9	591,032	6	6	48,864	16	8
1874	1,156	510,291	1,269	543,693	343,297	19	11	723,844	496,448	15	0	697,048	7	7	59,387	7	11
1875	1,162	510,902	1,341	573,826	480,771	19	6	771,144	527,949	12	10	644,615	0	6	60,818	4	3
1876	1,023	433,423	1,309	535,738	469,988	2	8	719,050	495,502	0	0	585,114	16	2	54,031	8	0
1877	1,065	469,348	1,328	577,376	502,861	6	4	781,502	540,560	0	0	680,750	11	7	56,584	3	11
1878	1,153	542,743	1,407	655,885	444,760	18	9	871,985	602,557	0	0	699,252	13	0	60,511	14	0
1879	1,031	492,163	1,330	651,501	340,501	0	0	860,375	591,090	0	0	648,427	0	0	57,477	18	9
1880	778	400,598	1,023	516,480	527,905	0	0	673,393	372,378	0	0	447,486	0	0	57,883	4	6

Return showing the price per ton and quantity of Coal raised, from 1829 to 1880 inclusive.

Coal.							
Year.	Tons.	Average price per ton.			Value.		
		£	s.	d.	£	s.	d.
1829	780	0	10	1·23	394	0	0
1830	4,000	0	9	0·00	1,800	0	0
1831	5,000	0	8	0·00	2,000	0	0
1832	6,000	0	7	0·00	2,100	0	0
1833	328	0	7	6·73	124	0	0
1834	8,490	0	8	10·00	3,750	0	0
1835	12,392	0	8	10·19	5,483	0	0
1836	12,646	0	9	1·06	5,747	0	0
1837	16,083	0	9	8·81	7,828	0	0
1838	17,220	0	9	9·05	8,399	0	0
1839	21,283	0	9	9·73	10,441	0	0
1840	30,256	0	10	10·86	16,498	0	0
1841	34,841	0	12	0·00	20,905	0	0
1842	39,900	0	12	0·00	23,940	0	0
1843	25,862	0	12	6·54	16,222	0	0
1844	23,118	0	10	8·34	12,363	0	0
1845	22,324	0	7	10·27	8,769	0	0
1846	38,965	0	7	4·06	13,714	0	0
1847	40,732	0	6	9·01	13,750	0	0
1848	45,447	0	6	3·38	14,275	0	0
1849	48,516	0	6	0·45	14,647	0	0
1850	71,216	0	6	6·77	23,375	0	0
1851	67,610	0	7	6·51	25,546	0	0
1852	67,404	0	10	11·33	36,885	0	0
1853	96,809	0	16	1·51	78,059	0	0
1854	116,642	1	0	5·63	119,380	0	0
1855	137,076	0	12	11·96	89,082	0	0
1856	189,960	0	12	4·96	117,906	0	0
1857	210,434	0	14	0·97	148,158	0	0
1858	216,397	0	14	11·84	162,162	0	0
1859	308,213	0	13	3·14	204,371	0	0
1860	368,862	0	12	3·36	226,493	0	0
1861	342,067	0	12	9·52	218,820	0	0
1862	476,522	0	12	9·73	305,234	0	0
1863	433,889	0	10	10·66	236,230	0	0
1864	549,012	0	9	10·10	270,171	0	0
1865	585,525	0	9	4·43	274,303	0	0
1866	774,238	0	8	4·44	324,049	0	0
1867	770,012	0	8	10·79	342,655	0	0
1868	954,231	0	8	9·08	417,809	0	0
1869	919,774	0	7	6·32	346,146	0	0
1870	868,564	0	7	3·54	316,836	0	0
1871	898,784	0	7	0·47	316,340	0	0
1872	1,012,426	0	7	9·92	396,198	0	0
1873	1,192,862	0	11	1·94	665,747	0	0
1874	1,304,567	0	12	1·37	790,224	0	0
1875	1,329,729	0	12	3·89	819,429	17	2
1876	1,319,918	0	12	2·06	803,300	5	6
1877	1,444,271	0	11	10·74	858,998	8	2
1878	1,575,497	0	11	8·28	920,936	7	4
1879	1,583,380	0	12	0·12	950,878	18	3
1880	1,466,180	0	8	6·36	625,336	11	7
Total	22,106,254	0	10	3·48	11,634,208	8	0

Great Britain—Exports of Coal—Taken from Mining Journal of 15th January, 1880.

Year.	Tons exported.	Price per ton.		Increase—Tons.	Decrease—Tons.
		s.	d.		
1861	7,934,832	9	2		
1862	8,380,673	9	1	445,841	....
1863	8,342,500	9	0	....	38,173
1864	8,900,872	9	6	558,372	....
1865	9,283,214	9	8	382,342	....
1866	10,142,260	10	3	859,046	....
1867	10,565,829	10	5	323,569	....
1868	10,967,062	9	11	401,233	....
1869	10,744,945	9	7	....	222,117
1870	11,702,649	9	8	957,704	....
1871	12,747,989	9	11	1,045,340	....
1872	13,198,494	15	10	450,505	....
1873	12,617,566	20	11	....	580,928
1874	13.927,205	17	3	1,309,639	....
1875	14,544,916	13	3	617,711	....
1876	16,265,839	10	11	1,720,923	....
1877	15,420,050	10	2	....	645,789
1878	15,483,816	9	5	63,766	....
1879	16,442,296	8	10	958,480	....
1880	18,702,551	8	11	2,260,255	....

In publishing the above statement the Mining Journal says :—"It will be seen from the above figures that during the last fifteen years our exports of coal have more than doubled, and that the greatest increase in one year was in 1880, when 2,260,255 tons more were exported than 1879. However, considerable oscillation took place in several years, when there was no increase, but otherwise. Thus in 1876 our exports exceeded those of the two following years, but there is now every appearance that our shipment of coals foreignwise will go on increasing as long as prices are anything like as low as they have been. France, which for years has been engaged in developing her own coal-fields, has long been our best customer, and Germany has followed. It was thought at one time that the progress made in opening out the coal-fields of Germany would tend to diminish our exports to that country, but such has not been the case, owing to the low prices charged for fuel, combined with moderate freights. Russia has also taken largely from us, especially of steam coal. From the figures given it will be seen that the value per ton of coal exported during 1879 and 1880 was lower than during any one period of the last twenty years, and considerably less than half of what it was in 1873. The importance of our export trade in coal can well be recognized from the increase which has taken place, and is now more than one-eighth of all that is raised in the United Kingdom. The home consumption has increased, but not at the same rate as the foreign. It is therefore patent to all who are connected with the trade that low prices mean an increase in the quantity of coal sent out of the country; and any action that can seriously affect the production or raise the price must tend to diminish our exports, and lead to less employment being given to our working miners."

Return showing the quantity raised, price per ton, and value of the Boghead Mineral or Petroleum Oil (cannel coal), commonly called Kerosene Shale, from 1865 to 1880 inclusive.

Year.	Tons.	Average price per ton.	Value.	Year.	Tons.	Average price per ton.	Value.
		£ s. d.	£ s. d.			£ s. d.	£ s. d.
1865	570	4 2 5·47	2,350 0 0	1874	12,100	2 5 1·48	27,300 0 0
1866	2,770	2 18 10·48	8,154 0 0	1875	6,197	2 10 2·22	15,500 0 0
1867	4,079	3 14 9·21	15,249 0 0	1876	15,998	3 0 0·00	47,994 0 0
1868	16,952	2 17 7·11	48,816 0 0	1877	18,963	2 9 0·82	46,524 10 0
1869	7,500	2 10 0·00	18,750 0 0	1878	24,371	2 6 11·49	57,211 0 0
1870	8,580	3 4 3·18	27,570 0 0	1879	32,519	2 1 10·96	66,930 10 0
1871	14,700	2 6 3·91	34,050 0 0	1880	19,201	2 6 7·03	44,724 15 0
1872	11,040	2 11 11·91	28,700 0 0				
1873	17,850	2 16 6·55	50,475 0 0		213,390	2 15 2·00	540,298 15 0

From the above we find that the quantity of boghead mineral or petroleum oil cannel coal raised in 1880 was 13,318 tons less than in 1879. This is to be accounted for in consequence of the over-production in the three previous years, and both Companies have large quantities now on the surface at the mines.

Unfenced abandoned coal pits.

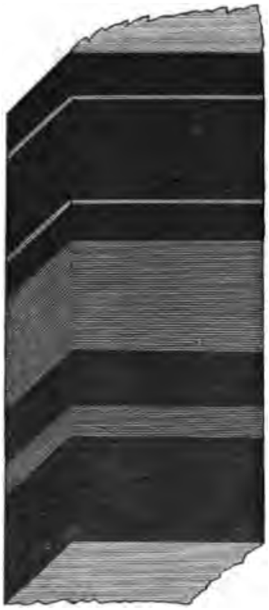
Messrs. J. and A. Brown's six dangerous and abandoned coal-pits adjoining the reserve, &c., at Four-mile Creek, and two others, were completed fencing round, and some of them filled in, by Mr. Tulip, on 21st of May; also two shafts refenced on Messrs. Osborne's land at Four-mile Creek.

Complaints made to me of deficient ventilation.

At the request of the miners' general secretary, I have inquired into three complaints made to me of deficient ventilation, &c., and after or before visiting the mines the matters complained of have immediately been put right by the colliery manager.

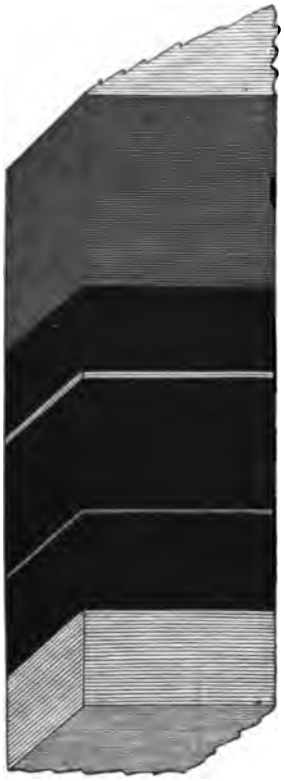
Notices of opening out and prospecting of new mines received during 1880.

In the Northern District, on 13th of May, I received notice from Mr. William Longworth that he had opened out a coal seam at Rix's Creek, near Singleton; on 28th of July, from Messrs. Allan, Wilde, and Hugh Walker and Company, saying they had commenced working the Borehole Coal Seam at Peppertown, near the Ferndale Colliery, Tighe's Hill; on 11th of August, from Mr. Merewether, saying he had commenced sinking a 9-feet air shaft on his leasehold property near little Redhead, and had stopped sinking, the shaft being down 131 feet, and through the coal seam formerly worked in the Victoria and Redhead Tunnels; borings are now being made from the bottom of the shaft to the Borehole seam by the diamond rock drill; on 6th of September, from Messrs. Alderson and Hopkins, giving notice that they intended to mine for coal on No. 3 allotment at Peppertown, near Ferndale Colliery, Tighe's Hill; on 8th of November, from Messrs. W. and T. Longworth, saying they had sunk a shaft on Mrs. Campbell's property at Rix's Creek, near Singleton. In the Southern District, on 12th of November, from Mr. Burall, informing me that the Mount Kembla Coal and Oil Company had some few weeks since commenced work on their property, and were opening out the two upper seams at Mount Kembla, near Wollongong.



	ft.	in.		ft.	in.
Shale.					
Coal	0	11		1	0
Roof—Band	0	1			
Coal			Coal, &c., worked.	2	0
Band				0	1
Coal				0	9
Chitter......(Jerry)				2	4
Coal..........(Little tops)				1	2
Chitter......(Morgan)				0	8
Coal				2	3
Total thickness				10	3
Grey post.					

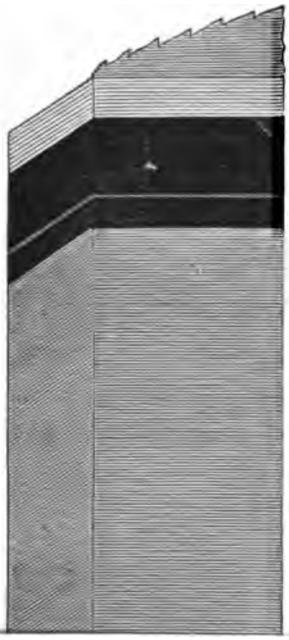
This represents a section of the Borehole coal seam, where it is now being worked by the Australian Agricultural Company, from under the 280-acre block leased to them by the Government, at 8d. per ton on all round coal raised, and measured by Mr. Mackenzie and Mr. Turnbull (the colliery manager).



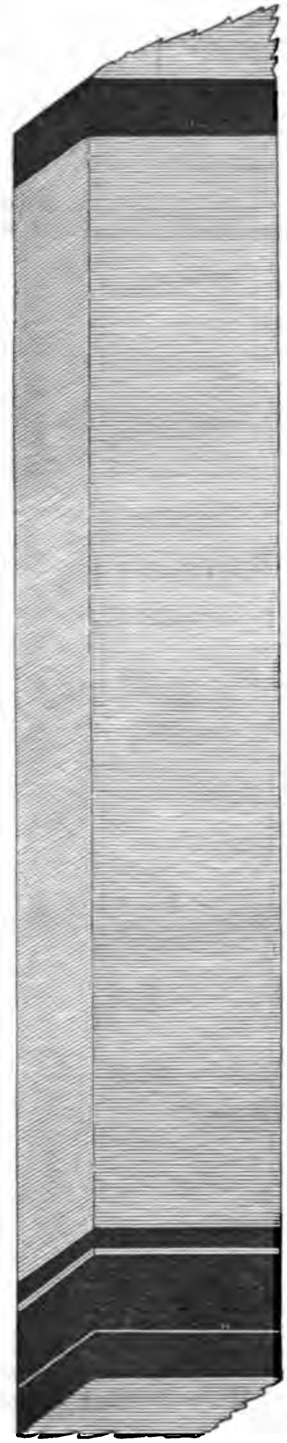
	ft.	in.
Sandstone	110	0
Chitter	4	0
Coal	1	9
Stone	0	2
Coal	2	9
Stone	0	1
Coal	2	0
Indurated clay	2	0
	122	9
Grey post.		

This is a section of the strata sunk through to the coal seam worked at the Rathluba Colliery, at Four-mile Creek, near East Maitland. The coal is suitable for steam, household, gas, smelting, blacksmith, and coking purposes, and dips to the north-east. The Company have the contract for the supply of coal to the New Hunter River Steam Company, at Morpeth, and James Fletcher, Esquire, M.P., is the colliery manager.

No. 1.

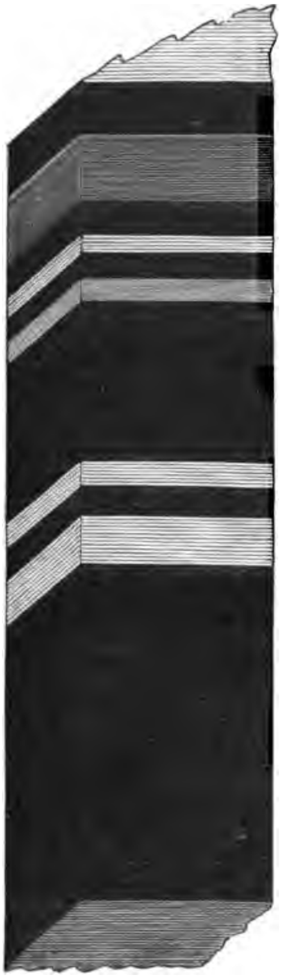


	ft.	in.
Drift, 5 ft. Sandstone and shale, 13 ft.	18	0
Ironstone band	0	10
Coal	1	8
Band	0	1
Coal	0	7



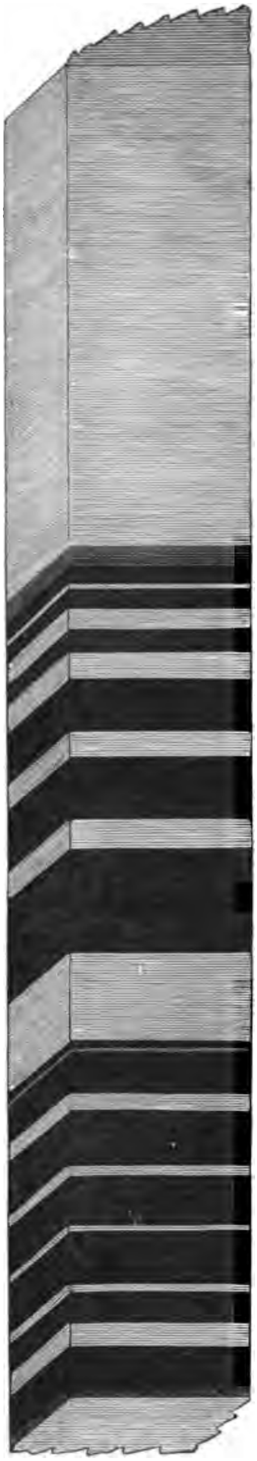
	ft	in.
Drift, shale and sandstone…………… .. …	26	0
Coal ………………………………… ……..	1	2
Sandstone, with Vertebraria and Glossopteris	22	10
Coal …………………………………………	0	5
Indurated clay ………………………………	0	2
Coal ……………………………………… ..	1	7
Indurated clay………………………………	0	1
Coal ………………………………………	0	10½
Indurated clay (floor).	53	1½

This is a section of the seam of coal opened out by Messrs. Beveridge and Beatty at Four-mile Creek. It was a heavy splint coal, and they some months stopped working it.



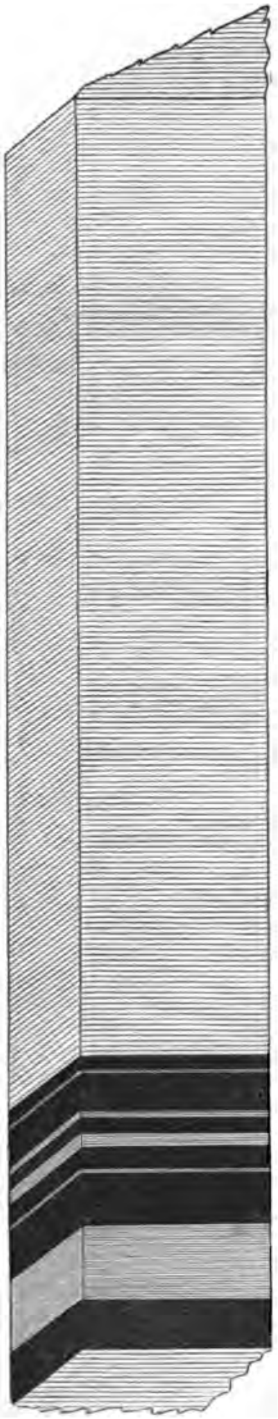
	ft.	in.
Shaft sunk through conglomerate	45	0
Coal	1	1
Band	0	1
Stone coal, &c.	1	4
Coal	0	8
Soft brown shale	0	5
Coal	0	6
Soft blue clay	0	6
Coal	3	4
Soft clay band	0	6
Coal	0	8
Soft clay	1	0
Coal, &c., bright and very soft, said to be 7 feet	7	0
	62	1
Cannel coal, thickness not proved.		

This is a section of the seam of coal now being sunk through by Mr. Lees, on Mr. Green's land, near the Wollombi Road, at Stony Creek. It is identical with the seams of coal formerly worked by the late Hon. Bourn Russell, at Stony Creek. When I visited the pit Mr. Lees was driving to prove the thickness and quality of the cannel.



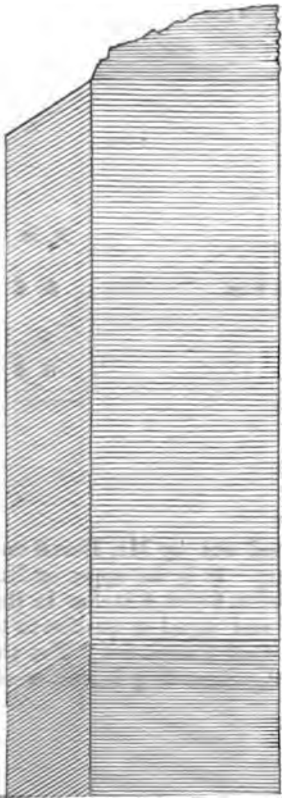
		ft.	in.
Brown-coloured indurated clay, very full of Glossopteris, especially on roof of coal, 9 to 10 feet		10	0
Coal and chitter		0	5
Bituminous coal		0	4½
Dark shale		0	0¼
Bituminous coal		0	5½
Brown indurated clay		0	4½
Bituminous coal		0	6½
Brown indurated clay		0	6
Bituminous coal		1	2
Brown indurated clay		0	7
Bituminous coal		1	4
Brown indurated clay		0	7
Bituminous coal, with very thin partings		2	2
Brown indurated clay		1	10
Bituminous coal		0	2½
Indurated clay band, inch to ½		0	0½
Bituminous coal	Portion worked.	0	11
Brown indurated clay and chitter		0	4
Bituminous coal		1	0
Brown indurated clay		0	2
Bituminous coal		1	1
Brown indurated clay		0	2
Bituminous coal		1	0
Brown indurated clay		0	2
Bituminous coal		0	8
Brown indurated clay		0	6
Coal		1	1
		27	8¼
Brown indurated clay (floor of seam).			

This is a section of the coal seam sunk through by the Singleton Colliery Company, near Rix's Creek and Singleton. The Company have constructed a tramway over a mile in length to connect the mine with the Great Northern Railway; 6 feet 9 inches in thickness is the portion worked, and it is a bituminous coal suitable for steam, household, gas, smelting, blacksmith, and coking purposes. The dip is about 1 in 12 to the north-west.



	ft.	in
Blue shale	20	0
Coal	0	4
Black shale	0	0½
Coal	0	10
Grey indurated clay	0	1
Coal	0	4
Brown indurated clay	0	3
Coal	0	6
Grey indurated clay	0	1
Coal	1	1
Indurated clay	1	8
Coal	1	0
	26	2½
Grey indurated clay.		

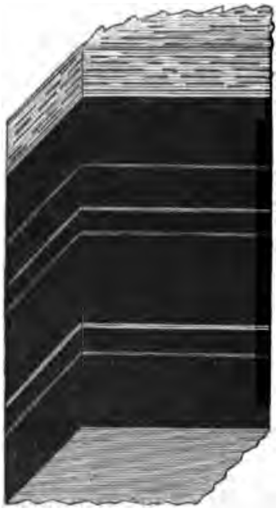
This is the seam of coal opened out and worked from a 26-feet shaft by Mr. Longworth, at the Ellsmere Colliery, near Rix's Creek and Singleton. It is a bituminous coal, suitable for steam, household, gas, smelting, blacksmith, and coking purposes. It dips about 1 in 12 to the south-west.



	ft.	in.
Hawkesbury sandstone and conglomerate.		
Shale	11	9
Shale, &c.	4	1

	ft.	in.
Coal, 5 ft. 10 in. to 6 ft. 6 in.	6	6
	6	6

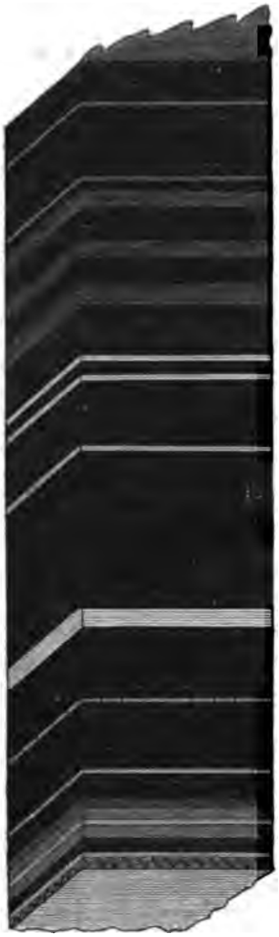
This is a section of the coal seam now being opened out by Mr. Burall on the Mount Kembla Coal and Oil Company's property near Wollongong. It is the upper or No. 1 seam of coal, and where opened out averages from 5 feet 10 inches to 6 feet 6 inches in thickness, the drive being intersected by two faults. It is identical with and equal in quality to that worked by the Bulli, Coal Cliff, Osborne, Wallsend, and Illawarra Coal Companies. The Company are constructing a tramway from the mine to Five Island Point, where they intend erecting a jetty and shipping the coal.



	ft.	in.	ft.	in.
......Coal ..	0	0		
......Band ..	0	0½		
......Coal ..	0	10		
Roof—Shale ..	0	8		
Coal			1	4
Band			0	0½
Coal			0	10½
Band			0	1
Coal			0	5
Shale			0	0½
Coal			1	10½
Shale			0	1½
Coal			0	7
Band			0	0½
Coal, with a band			1	5
			7	0½

Fireclay (floor).

This represents a section of the No. 3 or thick coal opened out by Mr. Burall, on the Mount Kembla Coal and Oil Company's land.



	.	In.
Roof—Black metal.		
Hard splint coal	0	10
Dark clay	0	0½
Hard splint coal	1	6
Dark clay	0	0½
Coal	0	3
Black bituminous shale	0	4
Bright bituminous coal	0	9
Black bituminous shale	0	4
Bright bituminous coal	0	6½
Black bituminous shale, &c.	0	5½
Bright bituminous coal	1	0
Black bituminous shale, &c.	0	2½
Bright bituminous coal	0	3
White clay	0	1½
Bright bituminous coal	1	4
White clay	0	1½
Splint and bituminous coal	3	3
White indurated clay	0	5
Bright bituminous coal	1	6½
Clay band	0	1
Bright bituminous coal	1	5
Clay band	0	0½
Bright bituminous coal	0	7
Black metal	0	1½
Black kerosene shale	0	2½
Clay band	0	1
Kerosene shale	0	3½
Inferior coal	0	3
Kerosene shale	0	1½
Boghead cannel coal	0	2½
Floor—Fireclay.	16	9½

This represents a section of the coal seam opened out by Mr. Philip Winchester, for Dr. W. F. Mackenzie and C. K. Moore, Esq., at Middle River, near Lithgow, in the county of Cook. It is a bituminous coal, suitable for steam, household, gas, smelting, coking, and blacksmith purposes, and has a dip of about 1 in 20 north 70° east.

Borings for coal.

Mr. Fletcher, M.L.A., manager for the Ferndale Colliery, has kindly given me the following account of strata bored through at Ferndale, near Newcastle :—

No. 1 Borehole, Ferndale Estate.

	Feet	inches
Sand...	29	9
Rotten rock	4	0
Conglomerate	28	0
Brown soft sandstone	1	0
Brown sandstone mixed with clay	2	3
Shaly sandstone	10	0
Brown soft sandstone	0	7½
Shaly sandstone	9	4½
Shaly clay, "dark"	8	1
Coal...	0	3
Grey sandstone	25	0
Clay parting	0	1
Grey sandstone	3	0
Clay parting	0	1
Grey sandstone	1	0
Shaly sandstone and post bands...	57	6
	180	0

No. 2 Borehole, at Gravel Quarry, Ferndale.

	Feet	inches.
Shaly sandstone	9	0
Conglomerate	42	9
Brown clay...	0	9
Coal...	0	4
White shaly clay	0	4
Conglomerate	2	5
Shaly sandstone	1	6
Conglomerate	20	6
Clay...	0	6
Conglomerate	20	0
Dark shaly clay	5	3
Coal...	1	6
Brown clay...	1	10
Soft coal	0	6
White clay...	0	8
Coal...	3	3
Grey sandstone	0	6
	111	7

No. 3 Borehole, 200 yards N. of Gravel Quarry, Ferndale.

	Feet	inches.
Surface	1	0
Conglomerate	48	0
Shaly sandstone	5	4
Conglomerate	8	0
Shaly sandstone	17	0
Shaly clay...	15	9
Coal, soft	2	10
Band...	0	9
Coal...	3	0
Grey sandstone	0	4
	102	0

No. 4 Borehole, at Mr. Spark's Well, Ferndale.

	Feet	inches.
Well...	34	0
Conglomerate	50	6
Shaly clay...	5	0
Coal, soft	1	6
Coal...	3	0
Shaly band...	3	0
Coal...	2	7
Grey sandstone	0	5
	100	0

Mr. Green, the Waratah Coal Company's colliery manager, has kindly forwarded me, for publication, the following account of strata and seams of coal bored through by the Company with the diamond rock drill, situated one mile east of their Charles Pit, and near Flaggy Creek, in the county of Northumberland :—

	Feet	inches.
Yellow sandstone...	3	0
Grey sandstone, with pipeclay bands	8	11
Shale	0	1½
Coal...	0	7
Hard blue post	0	2
Grey post...	4	2
Conglomerate rock	5	11½
Grey post...	4	9
Very fine blue post	7	10
Blue post...	5	10
Very hard chert	0	5
Very hard grey post	8	3
Hard grey post	1	3
Very hard yellowish whinstone...	0	3
Close-grained blue post (very hard)	10	3
Dark band and coal	2	2
Soft pipeclay band...	0	4½
Black shale band...	0	2
Light fireclay band	1	4
Coal pipes and band (dark)	4	8
Hard blue post	2	8
Dark blue shale, with fossils	2	4
Dark blue shale	4	2
Very hard light-coloured chert...	9	2
Grey post...	5	4
Blue post...	16	3¼
Hard dark blue shale, with fossil leaves and metal partings	13	9¼
Hard light blue post, with threads of shale	18	8¼
Very hard blue post	7	1¾
Hard blue post...	8	8
Fine grey sandstone	1	4
Bluish grey post...	10	0
Hard grey post (metal partings)...	10	0
Blue shale, with fossils and coal (very small)	6	4
Dark fireclay band...	0	1¾
Black band...	0	6
Coal...	0	1
Chocolate-coloured band...	0	0¾
Coal (inferior) and band...	1	7

	Feet	inches.
Dark brown band ...	0	7
Coal (middling)	0	9
Band...	0	5½
Coal (inferior) and partings	0	3
Coal ...	1	0
Coal (middling)	0	11½
Very hard blue band	0	9
Coal (good) ...	0	10
Band...	0	0½
Coal (good) ...	1	2
Band and coal	0	4
Coal (very brassy)...	1	1
Coal (good)...	1	4½
Blue shale (with fossils) ...	1	8½
Bluish grey post	4	0
Black shale (coal mixed) ...	1	0
Clear light coloured chert	14	0½
White post with chert mixed	13	11
Coal ...	0	1
Band	0	0¼
Coal ...	0	10¾
Band...	0	0¾
Coal ...	2	5¼
Stone	0	4
Hard blue post	13	2¼
Fine grey sandstone	7	7
Conglomerate	17	9
Blue shaly post with metal partings	18	9¾
Coal (middling)	0	4¾
Band	0	0¼
Coal (inferior)	0	9
Very dark band	0	6½
Coal (good) ...	0	6½
Coal ...	0	8¾
Band	0	5½
Coal ...	0	5
Coal with band	1	0
Coal, very good	0	7
Stone	0	5
Very hard close-grained blue post	20	0
Hard grey sandstone	16	4
Dark blue shale	13	0
Black shale (resembling kerosene)	1	8
Hard blue post	29	0
Blue shale post (leaf fossils)	2	0
Light-coloured fine clay band	0	11
Coal, very good	1	6
Coal, brassy	0	6
Dark shale (metal partings)	15	1
Hard dark-coloured close-grained post...	10	0
Gray sandstone	3	7
Hard dark-coloured close-grained post...	10	2
Light sandstone (reddish cast) ...	2	8
Blue post with layer of shale	3	10
Hard brittle stone with black thread through it	5	2½
Black shale...	2	10
Coal ...	0	3
Brown band	0	3
Coal ...	0	1½
Coal and brown bands	1	2½
Coal ...	0	3
Coal and band	1	0
Coal (very good) ...	1	0
Black band ...	0	4
Coal (very good) ...	3	0
Coal with thread of band	0	6
Coal ...	0	7
Stone band ...	0	1
Coal ...	0	11
Dark blue shale	1	9
White post ...	0	5½
Dark band ...	1	9
White post ...	8	3
Grey sandstone with black threads	0	7½
Very dark shale	4	4½
Coal with thread of brown band	0	6
Stone band ...	0	0⅝
Coal and band	0	2
Brown band	0	0⅜
Coal ...	0	1
Black shale...	0	3
Bluish grey sandstone, very firm	16	10¾
	483	1⅛

Melbourne International Exhibition.

I collected nine sections of coal, cut out of the seams at work, which were supplied me by the managers of the collieries, viz. :—

1st. From the Newcastle Wallsend Colliery.
2nd. „ New Lambton Colliery.
3rd. „ Newcastle Coal-mining Company.
4th. „ Waratah Colliery.
5th. „ Greta Colliery.
6th. From the Osborne Wallsend Colliery.
7th. „ Illawarra Coal Company.
8th. „ Coal Cliff Coal-mining Company.
9th. „ Vale of Clywdd Colliery.

And Mr. Fletcher, M.L.A., colliery manager for the Co-operative Mine, sent some fine specimens of coke from that colliery, which were forwarded as well as the above-mentioned pillars of coal, and placed in the New South Wales Court at the Melbourne International Exhibition.

In conclusion, I have only to add that there were forty-three collieries under inspection and opening out, against thirty-seven in the preceding year, and that this year's returns show a decrease in the Northern District of 117,612 tons of round and small coal raised, valued at £302,243 11s. 6d. ; a decrease in the Southern District of 26,807 tons, valued at £40,552 ; and an increase in the Western District of 26,929 tons, valued at £17,108 6s. 9d.

I have, &c.,
JOHN MACKENZIE, F.G.S.,
Government Examiner of Coal Fields.

The Half-yearly Report of the Inspector of Collieries on the state of the various Collieries in New South Wales, and Accidents therein, investigated by the Inspector, for the Half-year ending 31st December, 1880.

The Examiner of Coal Fields, Newcastle,—

Sir, Newcastle, 12 January, 1881.

Pursuant to the provisions of clause 26 in the Coal Mines Regulation Act, 1876, I have the honor to transmit to you this my half-yearly report on the state of the various collieries under inspection in the several districts of the Colony during the six months ending on 31st December, 1880.

The total number of collieries under inspection during the first half of the year was 37—viz., 26 in the Northern District, 4 in the Southern District, 6 in the Western District, and 1 in the Berrima District=37. During the second half of the year, the period covered by this report, 4 fresh mines have been started in the Northern District—namely, Bellevue Mine, at Lake Macquarie, and three small mines at Peppertown, near Tighe Hill, viz., Walker and Wildes's, Hopkins & Co.'s, and Snedden's Mine.

In all the other districts the numbers are the same as the previous half-year.

Number of collieries under inspection in each district for the present report :—

Northern District	30 coal mines		
Southern ,,	4 ,,		
Western ,,	5 ,,	and 1 shale mine	
Berrima ,,	...	1 ,,	
	39 ,,	,, 2 ,,	= 41 mines.

Preliminary works have been started for opening new mines in each of the several districts.

Present State of the Mines.

The mines were never in a more satisfactory condition in a sanitary sense than they are at the present time, and the colliery managers and owners continue to manifest a praiseworthy desire to comply with the several provisions of the law.

A. A. Company.—There are about 550 men and horses employed in the mine during the day, for whom about 80,000 cubic feet of air per minute is introduced, which is considerably over the minimum quantity required by the Act. The other provisions of the law are complied with also.

N. C. M. Company.—About 50,000 cubic feet of air per minute is introduced into the mine for about 240 men and horses employed therein, which is more than double the minimum quantity required by the Act. The provisions of the law are enforced in other matters also.

Ferndale.—About 13,000 cubic feet of air per minute is introduced into the mine for about 120 men and horses employed therein, which slightly exceeds the minimum quantity required by the Act. The provisions of the law are complied with in other matters also.

Ferndale No. 2.—Only two men employed in the mine. No cause of complaint.

Walker & Wilde.—Only the two owners themselves work in the mine. No cause of complaint.

Hopkins & Co.—Only the two owners themselves work in the mine. No cause of complaint.

Snedden.—Only two men employed in the mine. No cause of complaint.

New Lambton.—About 120 men and horses are employed in the mine during the day, for whom about 15,000 cubic feet of air per minute is introduced, which exceeds the minimum quantity required by the Act. No cause of complaint.

Lambton.—About 450 men and horses are employed in the mine, and about 100,000 cubic feet of air per minute is introduced therein, which is over double the minimum quantity required by the Act. No cause of complaint.

Goose.—Only two men generally employed in the mine. No cause of complaint.

Waratah Tunnel.—Only about eight men now partially employed in the mine. No cause of complaint.

Wallsend.—About 30,000 cubic feet of air per minute is introduced into the B. pit, for about 200 men and horses employed therein, and about 35,000 cubic feet per minute into the tunnel, for about 240 men and horses employed, which quantities are in excess of the minimum required by law. No cause of complaint.

Co-operative.—About 45,000 cubic feet of air per minute is introduced into the mine, for about 360 men and horses employed therein, which is over the minimum quantity required by the Act. No cause of complaint.

Brown's Colliery.—About 280 men and horses are employed in the mine, for whom about 35,000 cubic feet of air per minute is introduced, which is in excess of the minimum quantity required by the Act. No cause of complaint.

Duckenfield.—Owing to slack trade, only a few men were employed in the mine during the six months. No cause of complaint.

Alnwick.—About twenty-five men and horses employed in the mine, for whom about 4,000 cubic feet of air per minute was introduced. No cause of complaint.

Rathluba.—About 4,000 cubic feet of air per minute is introduced into the mine, for twenty-five men employed therein. No cause of complaint.

Tulip's Pit.—Only four men at most employed in the mine. No cause of complaint.

Mount Enterprise.—Only the two lessees themselves working in the mine. No cause of complaint.

Mitchell.—Only about four men generally employed in the mine. No cause of complaint.

Bloomfield.—Only three men generally employed in the mine. No cause of complaint.

Anvil Creek.—The mine is still in process of re-opening. About twenty men employed therein. No cause of complaint.

Greta.—The colliery is working very irregularly, and only about sixty men and horses employed in the mine, for whom about 10,000 cubic feet of air per minute is introduced. No cause of complaint.

Singleton Colliery.—About ten men are employed in the mine, for whom about 2,000 cubic feet of air per minute is supplied. No cause of complaint.

Rix's Creek.—Doing very little; only the lessee himself employed about half-time. No cause of complaint.

Longworth's.—About six men are generally employed in the mine near Rix's Creek. No cause of complaint.

Wingen.—The mine was recently stopped; still idle.

Morrisett.—Only two men generally employed at the mine—doing very little work. No cause of complaint.

Bellevue.—Only a few men employed opening out the mine, &c. No cause of complaint.

South Waratah.—The colliery has been working very irregularly, owing to slack trade, &c. The number of men and horses employed in the mine has fluctuated very much, probably not more than 100 on an average, for which number about 40,000 cubic feet of air per minute was introduced into the mine. No cause of complaint.

SOUTHERN DISTRICT.

Osborne, Wallsend.—About 12,000 cubic feet of air per minute is sent into the mine, for about ninety men and horses employed therein. No cause of complaint.

Mount Pleasant.—Owing to a strike at the mine the number of men and horses employed therein was greatly reduced during the six months, whilst the ventilation was kept up to about 12,000 cubic feet of air per minute. No cause of complaint.

Bulli.—About 170 men and horses are employed in the old tunnel, for whom about 28,000 cubic feet of air per minute is introduced, and twenty-five men and horses in the new tunnel, for whom about 7,000 cubic feet of air per minute is supplied. No cause of complaint.

Coal Cliff.—About seventy men and horses are employed in the mine, for whom about 8,000 cubic feet of air per minute is introduced therein. The miners are not yet paid by weight for the coal they get. No other cause of complaint.

WESTERN DISTRICT.

Vale of Clwydd.—About 8,000 cubic feet of air per minute is introduced into the mine, for about thirty-six men and horses employed therein. No cause of complaint.

Eskbank.—About fifty men and horses are employed in the mine, for whom about 7,000 cubic feet of air per minute is supplied. No cause of complaint.

Lithgow Valley.—About forty men and horses are employed in the mine, and about 6,000 cubic feet of air per minute is sent down for them. No cause of complaint.

Bowenfels.—Only about eight men and horses are employed in the mine, and about 2,000 cubic feet of air per minute is sent down for them. The miners are not yet paid by weight for the coal they get. No other cause of complaint.

Cooerwull.—Only one man employed about half-time at the mine. No cause of complaint.

Hartley Shale.—About 10,000 cubic feet of air per minute is sent into the mine, for about forty men and horses employed therein. No cause of complaint.

Joadja Shale.—About seventy men and horses are employed in the mine, for whom about 8,000 cubic feet of air per minute is introduced. No cause of complaint.

Accidents in mines.

I feel grateful in being able to repeat in this report a statement made in previous ones, namely, that both colliery managers and owners continue to most carefully supply the miners with timber, &c., wherewith to secure their working places and protect themselves against accidents, &c., so that not in a single instance of the accidents investigated by me were the colliery officials blameworthy for such accidents. It has fallen to my lot to investigate and report on ten separate accidents, resulting in the death of two persons and serious bodily injuries to eight persons. It is a singular fact that the two fatal cases happened on the surface, and that no person actually saw either. The first fatal accident happened to a labourer named Thomas Allum, through being run over by the empty coal waggons on the incline plane at the Osborne Wallsend Colliery, near Wollongong, on the 24th September last. The Wollongong District Coroner, Mr. E. Smith, opened a coroner's inquest on the body of the deceased on 25th September, for the purpose of burial, &c., and then adjourned it till the 2nd of October, for the attendance of the Examiner of Coal Fields or the Inspector of Collieries. I attended the adjourned inquest on said date at Wollongong. It appears from the evidence given at the inquest by Thomas Shipp, who was employed along with the deceased on the incline plane, that the witness and deceased were at work close together and when they saw the full set of coal waggons descending the incline they both moved one side to let them pass by; however, as soon as the full set had passed the deceased returned to his work, without knowing to Shipp, just in time to meet the empty waggons coming up the incline, which ran over him and caused his death. Both the witness Shipp and the local colliery manager, Mr. W. Green, stated on oath that the men's positive orders or instructions were "to leave the incline as soon as the ropes moved, and not to return to it till the ropes stopped again," and had such instructions been obeyed the accident would not have happened. After a careful inquiry the Jury found a verdict of "Accidental death," with which I fully agree.

The second fatal accident happened to a labourer named John Roach, through being jammed between two large coal waggons on the Borehole pit top, on the 28th December. However, the sufferer lived till the 31st, when he died from the injuries sustained on 28th. The District Coroner, C. B. Ranclaud, Esq., held a coroner's inquest on the body of the deceased on the 1st January instant, at Hamilton, which I attended. John Rushford, a fellow labourer, was examined at the inquest, who stated on oath that the deceased was at the time letting down some empty waggons to be filled with small coal, standing between the two lines of rail handling the brake, and the witness on the other side of the waggons, and when witness came round to the deceased he found that he had been jammed between the transverse ends of the framework of one of the waggons he was letting down and another one standing close by on the other line. Both this witness and James Jones, top overseer, who also gave evidence at the inquest, stated that the deceased had been doing the work he was employed at for a period of about fifteen years, and was consequently well acquainted with the nature of his work, and was allowed to do it in his own way without interference from any one. The Jury found a verdict of "Accidental death," with which I fully agree.

The first of the eight non-fatal accidents was a leg fracture to a miner named Thomas Ramsay, by a fall of coal in the Wallsend Colliery, 23rd July. The second a leg fracture to a miner named John Marshall by a fall of coal in the Lambton Colliery on 30th July. The third, severe bruises on head, &c. to a miner named James Devon, by a fall of coal in the Co-operative Colliery on 23rd August. The fourth, loss of arm to a horse-driver named Carr, through being run over by empty coal skips in the Wallsend Colliery on 24th August. The fifth, a leg fracture to a miner named Henry Short, by a fall of coal in the South Waratah Colliery on 6th November. The sixth, severe bruises on abdomen, &c., to a miner named Alexander Stewart, by a fall of coal in the Borehole Colliery on 10th November. The seventh, leg fracture to a miner named John Rushton, by a fall of coal in the New Lambton Colliery on 2nd December. The eighth and last, leg fracture to a miner named John Cork, by a fall of coal in the Ferndale Colliery on 7th December.

I have investigated several other slighter accidents during the six months.

The usual tabulated list of accidents is hereto appended.

I have, &c.,
THOMAS LEWIS,
Inspector of Collieries.

TABULATED LIST of fatal and non-fatal accidents investigated by the Inspector of Collieries during the six months ending 31st December, 1880.

No.	Date.	Colliery.	Name of Sufferer.	Occupation.	Remarks on cause and extent of injuries.	Non-fatal.		Fatal.		Total non-fatal.	Total fatal.
						Fall of coal.	Run over by coal skips.	Run over by waggons.	Crushed between waggons.		
1	July 23rd......	Wallsend	Thomas Ramsay......	Miner	Leg fracture by a fall of coal ...	1	...	...	...	1	...
2	,, 30th......	Lambton	John Marshall.........	,, ...	, ,, ...	1	...	...	...	1	...
3	August 23rd...	Co-operative	James Devon	,, ...	Severe bruises ,, ...	1	...	...	...	1	...
4	,, 24th.	Wallsend	— Carr	Horse-driver	Arm mutilated, overrun by empty coal skips.	...	1	...	...	1	...
5	Sept. 24th ...	Osborne Wallsend ...	Thomas Allum	Labourer	Fatal. Run over by coal waggons on incline plane.	...	...	1	...	...	1
6	Nov. 6th	South Waratah	Henry Short	Miner	Leg fracture by a fall of coal ...	1	...	...	...	1	...
7	,, 10th......	Borehole	Alexr. Stewart	,, ...	Severe bruises on abdomen and back by a fall of coal.	1	...	...	...	1	...
8	Dec. 2nd	New Lambton.........	John Rushton	,, ...	Leg fracture by a fall of coal ...	1	...	...	...	1	...
9	,, 7th	Ferndale	John Cork	,, ...	,, ,, ...	1	...	...	...	1	...
10	,, 28th......	Borehole	John Roach	Labourer	Fatal. Crushed between top waggons.	...	...	...	1	...	1
					Totals	7	1	1	1	8	2

REPORT OF INSPECTOR OF MINES.

Sir,
Hill End, 4 January, 1880.

In furnishing you with my annual report for the year 1880, I do myself the honor to inform you that on the 10th February I started from my head quarters (Hill End), on an official tour through the principal mining districts in the North; and from that date to the end of the year I have travelled on official duty 6,326 miles, and inspected 52 tin mines, 12 silver mines, 8 copper mines, 197 quartz, and 116 alluvial gold mines, making a total of 385 mines. Some of my time has also been occupied with inspecting and certifying to work done and material supplied by the several prospectors, aided out of prospecting vote, as well as reporting on several applications for aid out of said vote. So far no beneficial results have been derived, although the Belmore Prospectors, Canowindra, the Bald Hill Prospectors, Bathurst, and one or two others, have still great hopes of success.

I am pleased to be able to state that accidents in metallic mines have greatly diminished throughout New South Wales. The regulation for the inspection of mines other than coal and shale mines have now been in force for nearly five years, and I think with beneficial results to the mining community generally. I am aware that it would be impossible for me, being the only Inspector of metallic mines, to visit every place in which metallic mining is carried on throughout New South Wales, therefore I have adopted the next best plan, *i.e.* in having copies of said regulations posted at the Mining Registrar's Office, or other conspicuous places, for the information of the general public.

Tin-fields.

Tingha, the township of the Cope's Creek tin-fields, is situated on the banks of the Cope's Creek, in the Inverell District, about 105 miles northerly from Tamworth.

The rise in the price of tin during the latter part of 1879 has given quite an impetus to tin-mining. In a few weeks the local price of tin ore rose from £27 to £45 per ton, and tin-bearing country which in 1879 was considered worthless is now being worked with payable results.

So far the richest tin deposits on this field have been found from Stony Creek to the township of Kimberley, a distance of 7 miles, but payable stanniferous wash has been discovered for a distance of 25 miles. During my visit prospectors were out in all directions, and parties worked on payable tin from Tingha to Bundarra, at Cohen's Gully, Spring Gully, Moses Gap, and Sandy Creek.

At Cope's Creek proper several Europeans and Chinese were at work. The tin is often found on and near the surface, but in some instances stripping and sinking has to be resorted to. I was informed by Messrs. Moore and Litchfield—gentlemen well acquainted with the whole district and to whom I am greately indebted for valuable information and kindness received—that the depth of payable workings had so far only reached 60 feet.

At Stony Creek, Middle Creek, Sutherland Waters, Darvan Creek, Dick Jones' Lead, Irwin and Martin, The Gilgai's, The Ponds, Boro, Pine Ridge, and other places, parties were at work obtaining payable tin.

At Stannifer, about 7 miles northerly of Tingha, the Stannifer Tin-mining Company spent large sums of money. They obtained about 200 tons of tin ore on the surface, but the Company collapsed. I saw large heaps of conglomerates impregnated with stream tin lying about the surface, and several parties both European and Chinese were at work on payable deposits of tin. There seemed to me to be a probability that a lead of stream tin would be found from the Stannifer through a place named Hill End into Middle Creek: what strengthened this opinion was the discovery of tin by Cooper and party in basaltic country, about 1 mile north-west of Stannifer; depth of sinking, 50 feet.

Tin-mining in the Tingha and Inverell district is certainly in its infancy. Those parts of this tin-field which presented the least difficulties and expense only have been worked, whereas there are vast tracks of basaltic country which have been very little, if at all prospected. With the exception of Dick Jones's lead, and a few tunnels at Stony Creek, very little has been done in prospecting the basaltic country.

That these ancient watercourses now covered by volcanic action contain rich stanniferous deposits is but reasonable to suppose; practical knowledge and scientific researches encourage the belief that large mineral wealth lays hidden beneath these basaltic tracts. On the development of the basaltic country and tin lodes must depend the future permanency and prosperity of our tin-fields. During my visit nearly if not all the parties out prospecting were working miners, and could not afford to go to any great expense, nor to lose the value of their labour for any length of time. Here the co-operative principle, capital and labour combined, might be beneficially introduced, and by its operations the township of Tingha might become the emporium of a large, prosperous, and permanent mining district.

There are several tin-lodes near Tingha well worthy to receive proper attention, viz., the Butchart, Reeves, Pond Gully, and others. Some of these lodes produced solid masses of tin ore several inches in thickness; still, with the exception of the Butchart, worked by Mr. Groves, and the Pond Gully, worked by Chinese, they were all deserted.

I am aware that during the memorable mining mania large sums of money have been squandered, but with proper system and economy the tin-mining industry must become a source of profitable employment for both capital and labour.

During my stay at Tingha my attention was drawn to a matter and many complaints were made to me, not only by miners but also by influential persons of the district, that blocks of mineral lands, varying from 20 acres upwards, had been taken up by persons who had not the slightest notion of spending money on the development of same, but who simply hold these blocks in the hope that some other parties will either prospect on or near them, and then as a consequence a heavy tribute would be demanded.

In my report from Tingha on the 2nd of March last, I suggested—and if not already acted upon, I would again respectfully suggest to the Honorable the Minister for Mines—that lists of mineral leases, similar to those of the gold-mining leases, may be issued, giving the names of the lessees and applicants of leases, also the number of men to be employed. These lists could be posted at the Mining Registrars' offices, for the information of the public.

The Vegetable Creek tin-fields, which are situated in the Glen Innes and Tenterfield districts, were visited and fully reported on by me on the 27th of March last; I will therefore only give a summary in this report. Vegetable Creek is, as far as yet proven, the most extensive and permanent tin-field in New South Wales. Not only are there extensive deposits of rich stream tin, but there are also scores of tin lodes of great richness within a radius of 30 miles of the Vegetable Creek township.

Payable tin deposits have been found in a north and south direction from the Severn River to Silent Grove, a distance as the crow flies of 26 miles; and east and west from Oakey Creek, past Pye's and Boundry Creek, to Pierce and party's mine, a distance of 38 miles.

The principal mines at work during my stay at Vegetable Creek were the Great Britain (Capt. Williams, manager), the Graveyard, Vegetable Creek Tin-mining Co. (Mr. Cadell, managing director), the Rothschild, Moore & Co. (Mr. Chandler, manager), the Garden Palace (now Wesley) Tin-mining Co. (Captain Wesley, manager), the Kangaroo Flat, Hall Bros., Griffith and Hammond, Nagle and Party, Fox and party, Morten and Partridge & Co., the Y Waterholes, Cadells, and others.

The first discoveries of tin deposits were made on the surface or in shallow ground requiring only a few feet of stripping, as in the Great Britain, Rothschild, and others. The Vegetable Creek Tin-mining Co. however obtained some very rich patches at the depth of 100 feet; in one of these gullies or ancient water-holes the Company obtained about £35,000 worth of tin ore.

Rose Valley, which during this year has been the principal centre of attraction, is in the basaltic formation. Messrs. Griffith and Hammond, tributers of Irby, Andrews, and O'Donnel, were the first who for their energy and perseverance met a rich reward. After sinking through the basalt they came (at the depth of 66 feet) on a rich clayey quartz pebble and cemented wash which, fully 1 foot in thickness, yielded fully 200 cwt. of tin ore per cubic yard. In a few months these tributers extracted about £10,000 worth of tin ore.

Nagle & Co. & Fox & Co., after sinking through decomposed basalt and pipeclay, struck about 3 feet of tin-bearing wash. These parties hold a tribute in a 40-acre freehold (conditional purchase). In March last these two parties raised from 3 to 4 tons tin ore per day; and the owner of the land, a widow, was in receipt of about £50 per day for tribute out of these 40 acres. The terms agreed upon were that Nagle and party and Fox and party pay all working expenses, in addition to paying £5 per ton of tin raised, as long as the local price of tin only realized £30 per ton, but any rise in the value of tin above £30 per ton, the owner divided equal with the tributers. While I stayed at Vegetable Creek the local price of stream tin was £50 per ton; this widow therefore obtained £15 per ton for every ton of tin raised by the above tributers.

About ¾ of a mile in a westerly direction Morton and Partridge were also on rich tin deposits. I think that Griffith and Hammond, Fox & Co., Nagle & Co., and Morten, Partridge & Co., will form one and the same lead.

The Garden Palace (now Wesley's) Tin-mining Co. was, up to the date of my visit, undoubtedly the richest mine in the Vegetable Creek district. It is situated at the Rose Valley, and consists of 180 acres mining conditional purchase. Captain Wesley held this land for five years, during which time it was worked almost continually with but little success, until Griffith and Hammond struck rich tin, when Captain Wesley's brothers sank several shafts through the basalt, in one of which the rock was dipping very rapidly, and by following this they were rewarded by striking payable tin. Their whim shaft was sunk through 90 feet nearly all very hard basalt, then through several feet of pipeclay. Amongst the layers of this pipeclay imprints of various kinds of leaves were found—a few of which I forwarded to you. This pipeclay rested on sand (not unlike the white sand on a sea-beach) containing payable tin; under this about 9 feet of coarse wash was met with. Total thickness of wash, from 15 to 16 feet, yielding probable from 2 to 3 cwt. of tin per cubic yard. Total depth of sinking, 132 feet.

In March last I did myself the honor of forwarding you with my report on the Vegetable Creek tin mines a tracing showing the Wesley's and other properties at the Rose Valley; I also forwarded samples of wash from various mines in this district.

The Kangaroo Flat (Halls, Bros.), Sugar-loaf Mountain, Surprise, and other valuable mines were also reported on by me.

The deep lead in the basaltic formation is instructive and interesting. The basalt seems to have taken its origin from the Tent Hill Range flowing westward, and can be traced by Strathbogie towards the Rocky Creek, through miles of fertile valleys and gentle sloping or rugged hills. Imprints of leaves are often found in the pipeclay immediately under the basalt, but no fossil bones, nuts, or wood have hitherto been met with.

There is also another interesting feature in these deep leads deserving strict observation, namely,—the ancient watercourses, now covered over by basalt through volcanic action, seem to take the same courses and bends as the modern watercourses at Vegetable Creek, fitting as it were into each other.

This opinion is confirmed by a conversation I had with Messrs. Cadell and Wesley,—gentlemen whose opinion on the geological features in the Vegetable Creek district is well worth noting. If this peculiar feature is once conclusively proved, it will form a good guide for the future in prospecting the basaltic formation of the Vegetable Creek district.

A map furnished by that able and energetic Mining Registrar, Mr. Gower, in his annual report of 1877, shows these features plainly.

If a thorough geological survey of the whole district could be made, beneficial results would undoubtedly follow. Nearly all the mines in the district are worked on the tribute system by the lowest tender,—in some instances the owners finding machinery, tools, &c.

The smelting works of Messrs. Reid and Moffat add greatly to the development of the Vegetable Creek tin-field. These smelting works are situated at Tent Hill, about 2½ miles from Vegetable Creek; they not only employ a large number of men, and give, or cause to be given, a fair value in the local market for tin ore, but Messrs. Reid and Moffat have given general satisfaction to the tin-producers, and are accordingly well patronised.

The success of our tin-mining industry has in a great measure to depend on the price of tin in the European market, and a constant and sufficient supply of water. Of the former there is every probability that the price of tin will never again fall so low as it did two years ago, and the latter could be obtained at Vegetable Creek from the Severn or Deepwater Rivers. This could be done by a Company with sufficient capital to bring from the above rivers a main race with branches extending to the different accessible points of this tin-field.

Capital and labour should also co-operate to prospect the basaltic country.

While stream tin can be raised at such very small cost, lode mining will be held in abeyance; but when the alluvial deposits of tin ore become scarcer, then the tin lodes at the Gulf, Mole Tableland, Silent Grove, the Grampian, and several other places will come to the front and will take their proper places in our tin-mining industry.

Silver.

The Boorook silver mines, which are situated about 25 miles northerly of Tenterfield, were visited and inspected by me in the early part of April last. Horton & Co.'s was the principal silver-producing mine at the time. The mine consists of a 2-acre lease, on which two shafts were sunk, the depth of which were 90 feet and 127 feet respectively. There are two lodes, the main lode and the cross lode; the strike of the former is 10° S. of W., of the latter N. and S., therefore intersecting each other at an angle. On the upper level the silver ore consisted of rich chlorides, but from the 80-feet level downwards it changes in a 2-feet well-defined lode of rich sulphites.

Mr. Davey, an English gentleman of undoubted ability, who has had the management of very extensive silver ore reduction and extraction works in Spain, has by the crude appliances to hand succeeded in reducing the loss of silver in the tailings to a very low percentage.

From the 4th April, 1878, when the first sample of 13 ozs. was forwarded to the Mint, up to the 12th April, 1880, no less than 35,265 ozs. of silver were extracted out of 1,837 tons of ore, yielding an average of nearly 19½ ozs. per ton. During my visit the total number of men was about twenty.

Machinery.—Two portable engines of 6-horse power and 4-horse power respectively, a three-stamp battery, four Wheeler's pans, and a Berdan; also several settling-pits. There was however some more machinery on the road, and a furnace for calcining purposes was to be erected.

The Silver King 4-acre lease, a promising mine, was worked on the tribute system. Machinery in connection was in course of erection on the Saw-pit Gully, and consisted of a 10-horse power portable engine, 3-stamp battery, four iron amalgamating barrels, and separater.

The Golden Age, No. 1 North (Halls, Carmichael, & Co.) were tunnelling on a soft lode, fully 6 feet wide, from which the yield of 15 ozs. of silver per ton was expected. The ore from this mine was to be treated at Hall & Co.'s reduction works.

These three small mines ought to be amalgamated, so as to make the property sufficiently large to encourage the erection of powerful and improved extraction and reduction machinery.

The Nil Desperandum (Halls & Co.) is a very promising lode. Some rich patches of gold and silver were obtained out of this mine years ago. By appearances this property ought to become very valuable as a rich gold and silver producing mine. I took about 10 lbs. of quartz promiscuously from a large heap out of this mine to the Department of Mines, and an official assay made gave the yield as 88 ozs. of silver per ton.

The ore is to be treated at Halls & Co.'s, whose machinery consists of 15-horse power engine, two batteries of five stamps each, two Denny grinders, and amalgamators. A Berdan and calcining furnace are to be added.

This machinery has been erected on the best site obtainable on the field—on the banks of the Cataract River—and commands a permanent water supply. M. Wesley Hall, manager.

There are also several other leases on the Nil Desperandum line. Although idle during my visit at Boorook, they ought to be valuable properties if systematically worked.

The Golden Crown, the Addison, the John Moffat, and other mines are all valuable properties, although at the time of my visit they did not seem to be in a flourishing condition.

Moffat's machinery is situated at Saw-pit Gully, and consists of a 7-horse power engine, two Wheeler's pans, concentrator, and calcining furnace.

In addition to the above machinery, Messrs. Macgregor & Co. have a 12-horse power portable engine, 3-stamp battery, Wheeler's pan, and Berdan, on the Boorook Creek.

A Mr. Miller and a Mr. Johnstone were also erecting machinery for the treatment of silver ores.

Perhaps the best plan for the development of the Boorook silver mines would have been one large establishment for the reduction and treating of ores instead of several small ones; and the European system might be beneficially adopted at Boorook, *i.e.*, mine-owners to sell their ore to a large treating establishment according to assay.

None of the Boorook silver mines have reached a depth of over 150 feet, therefore nothing has been done by which an opinion as to their real value could be formed. Every vein of quartz found at Boorook contains more or less silver, and parcels of ore from dozens of them have given high percentage by assay; but while at Boorook, I was informed by competent authorities that so far they had been unable to save the silver, the tailings generally containing the largest percentage.

That the Boorook silver mines are very rich there is no doubt whatever, but the failure of these mines so far has been in the defect of extracting, treating, and saving the silver. This is, therefore, a field for the *bonâ fide* capitalist to invest.

I also think that silver ore sufficiently rich to be payable will be found in several of our mining districts which I have visited.

At Glen Innes very rich specimens of galena (silver and lead) were shown me, but the party failing an appointment made, I could not visit the place from which these specimens were alleged to be taken.

At Copeland some of the reefs contain a large percentage of silver.

At Grenfell silver is known to exist, and some years ago I found rich galena specimens close to the township.

In the south a Company has been formed during the latter part of 1880 to work some galena deposits near Cooma. A Company has also been formed at Adelong to work the galena deposits near Yass. In the month of December I also picked up some chloride of silver specimens within 3 miles of the town of Queanbeyan, which I brought to the Department of Mines for assay. I may therefore confidently predict that our silver-mining industry will ere long be carried on successfully and on a more extensive scale.

Copper.

In July and August last I visited the north-west, and inspected the Great Cobar, New Cobar, Nimagee, and other copper mines.

The Great Cobar copper mine, which is at present the most extensive metallic mine in New South Wales, must be visited on several occasions before anything like an estimate and fair opinion can be formed of its magnitude.

This mine is situated 110 miles south of Bourke, and north-west of Orange about 360 miles, *via* Forbes, Euabalong, and Nimagee copper mines, but about 300 miles *via* Dubbo and Nymgyn, or about 550 miles from Sydney. The distance will however be considerably shortened as soon as the Bourke railway is opened as far as Nymgyn, from which Cobar (distance 80 miles, over comparatively level country) could be connected by tramway. The Company's land consists of 680 acres freehold and conditional purchase, and 400 acres of grazing and water reserves.

By surface indications there are supposed to be several lodes through this Company's property, but hitherto operations have only been carried on in the Western lode, on which there are four shafts—Becker's, Barton's, Hardie's, and Renwick's. Barton's shaft it now down 54 fathoms, or 324 feet. The lode on the bottom of this shaft has the appearance of permanency, and consists of rich solid sulphites. I measured the width, which was fully 46 feet. The north or Becker's shaft is also down 54 fathoms, on the bottom of which is a solid sulphite lode measuring 26 feet in width between the two shafts. The distance is 600 feet. From the south or Renwick's to the north, or Becker's shaft, the lode has been worked 1,160 feet in length. The lode varies considerably as to width. I measured it on different levels where it consisted of oxides, carbonates, and grey ores intermixed with floors of iron ore, which averaged from 3 to 100 feet in width. At the 26-fathom level the lode is 53 feet in width, consisting of rich carbonates and grey ores intermingled with floors of iron.

At the 47-fathom or 282 feet level the oxides, carbonates, and grey ores run out on a floor, and a lode of rich yellow sulphite comes in.

The ore raised by this Company has been gradually on the increase, as the following statistics, which at my request were kindly supplied me by Captain Dunstan, will prove.

Progressive statement of refined copper produced:—

	Ore smelted. Tons.	Product. Tons.
For half-year ended December 31, 1876	1,458	174
,, ,, ,, June 30, 1877	2,350	255
,, ,, ,, December 31, 1877	2,530	268
,, ,, ,, June 30, 1878	3,651	600
,, ,, ,, December 31, 1878	4,738	857
,, ,, ,, June 30, 1879	5,610	876
,, ,, ,, December 31, 1879	7,005	1,015
,, ,, ,, June 30, 1880	8,334	1,181
,, ,, ,, December 31, 1880	12,232	1,419

Wood.—A good supply of firewood, which consists of mulgah, belah, box, and black oak,—can be obtained at a distance of 5 miles from the mine, but the country being comparatively level a cheap tramway could be laid into the forest.

Water tanks.—The Company have now 25,000 yards excavated in tanks, and the Government have 20,000 yards tanks, but recent events have proved that these tanks are not sufficient to hold the necessary supply of water for the mines and population of Cobar.

Machinery and other plant.—A 40-horse power engine for winding, also driving a circular saw, ore-cracker, &c., and one in course of erection. A 6-horse power Tangye pump, an air-compresser, and appliances to drive three of Ford's patent rock drills; also in course of erection, one stone-cracker, a patent cracker and jigger, and a 6-horse power engine and Chilian mill; one refining furnace, two roasting furnaces, ten reducing furnaces, and three in course of erection, of which two have been completed since my visit.

Large powder magazine, brick-kilns, brick cottages, offices, out-houses, also weighing-machine, and 3,536 feet iron-railed tramways.

The actual number of persons directly employed in or about the mines at the time of my visit, leaving out carriers who take the copper to the railway station and bring back supplies to Cobar, were:—Miners, underground, 168; smelters, 112; men at grass, including officers, carpenters, blacksmiths, brickmakers, and tanksinkers, 167; wood-cutters and carters, 152; boys, 36; Total, 635.

Although the Board of Directors are entitled to great credit for their pluck and perseverance and good management in this undoubtedly rich mine, they could not have brought it to such a successful issue without the assistance of a gentleman such as Captain Dunstan, the manager of the Great Cobar Copper-mine, has proved himself to be. Valuable mines are often ruined through bad mining management, but Captain Dunstan has not only the experience of an old miner, but he has also the ability, tact, and firmness requisite for the manager of a large mine; he uses good judgment in selecting his men, and his underground captain (Captain Hicks) and the rest of his officers are a credit to the Company. To this must be attributed the almost total absence of accidents in this mine—only one fatal accident having occurred, through an explosion of powder when loading a hole. The ore is raised on contract under the Cornish systems, by public setting or survey every two months. The estimates of the contracts are based on allowing good miners to earn £3 per week. The contracting parties generally consist of from four to twelve men in each party. Each person employed by the Company has to pay 3s. per month—2s. for doctor in case of sickness, and 1s. for the accident fund, from which any employé of the Company receives £1 per week in case he is unable to work through accident.

Men who come in a drunken state to the mine, or are unable to go to work through drunkenness, are at once discharged.

The population of Cobar in August last, taking a radius of 3 miles, could not be less than 2,000.

The present drought and great scarcity of water at Cobar will necessarily retard the progress of the mine and district for a time. Captain Dunstan informed me, in a letter dated 23rd December, 1880, in answer to my request, that owing to the scarcity of water he had not been able work Ford's patent rock drill with the air-compressor sufficiently long to give me a fair opinion of same.

This drought will give the Company, and the inhabitants of Cobar generally, a lesson to provide still larger tanks for water storage. During my visit to Cobar there was a smart thunderstorm, and I noticed at the time that some of the iron-roofed dwellings or outhouses had no gutterings or tanks, but allowed the beautiful rain-water to escape, instead of saving it for domestic purposes.

New Cobar Copper-mine.—This mine is situated about 8 miles west of north from Cobar; it is a prospecting mine, and there are very good indications of a rich copper lode; the gossan and back of lodes can be traced for a considerable distance. If capital was forthcoming and judiciously expended on this property, it might be developed into a rich copper-producing mine.

The Nimagee Copper Mine.—This mine is situated on the boundary of the Messrs. Knox and Ellis's Nimagee Station and Roset's Hartwood Station, about 65 miles south of Cobar, but I was informed that the distance could be shortened by 15 miles. A mail coach runs once a week, *via* Orange, Forbes, Condobolin, and Euabalong.

I inspected this mine at the beginning of September last, and since then fuller particulars were kindly supplied me (at my request) by Captain Wills, mining manager of the Nimagee Copper-mine.

The lode showed well on different parts on the surface, and four shafts were working on the same.

The main or Barton's shaft was down 82 feet; the middle or Threlkeld's shaft, 103 feet; the north or Pope's shaft, 130 feet; and Broomfield's shaft, 34 feet. The ore is of a rich grey, green and blue carbonates, and red oxide, with the exception of Pope's shaft, where on the deepest level a rich yellow sulphite ore was coming in. At Broomfield's shaft there is a large blow or back of a lode showing on surface.

The lode in Barton's shaft strikes about 17 degrees west of north. Taking this property on the whole it certainly has the appearance of permanency, although it cannot be said that a sufficient depth has been obtained to form a fair estimate of its value. One thing is certain,—the ore is as rich and the lode has the same appearance as the lode in the top levels of the Great Cobar Copper-mine. At the Nimagee Mine, as at the Great Cobar Copper-mine, bunches or floors of iron ore are intermixed with the rich grey ores. There are three shafts supposed to be on one lode. I am doubtful whether such is the case, but if so the lode must break off in heaves. I should rather favour the supposition that there are at least two parallel running lodes, and that as a greater depth is obtained the lodes will be found less disturbed in a more settled country, and therefore of a more regular and less bunchy nature.

The Nimagee Copper-mine is worked by the Company with a spirit of enterprise such as perhaps has never been equalled in metallic mining in the history of this Colony. The mine has only been opened a few months, still in such short time they have in course of erection four roasting and reducing furnaces, large powder magazine, brick-kilns, shed for fire and ordinary bricks, large tank, store rooms, twenty iron-roofed cottages 24 × 14 feet for their workmen, and several other buildings. There is also a large amount of machinery in transit between Orange and the mine.

The Nimagee Copper-mining Company were fortunate in securing the services of Captain Wills, a trustworthy, able, and experienced mining manager, under whose care the Company will receive their just dues.

The following is an extract from Captain Wills's letter, dated Nimagee, December 16, 1880, and gives me information four months later than my visit. He says:—

> At your request I forward herewith a progress report of the Nimagee Copper-mine (Limited).
>
> Underground works.—As you are aware, there have been four shafts sunk on the mine, and have now reached the following depths:—Pope's shaft: depth, 161 feet from the surface to 70 feet, through green and blue carbonates and grey ores of good percentage, thence to the present depth through black oxides and yellow sulphites. The lode in the shaft is looking much better than when you visited the mine in September last. An end has also been driven south 185 feet through a well-defined lode, the ore being not of such high percentage, forming the change from black ore to yellow sulphites.

Threlkeld's shaft.—This is the same depth (103 feet) as it was at your inspection, and as you are aware, was sunk through a good lode of grey ore and green carbonates. A drive has been extended south 153 feet 4 inches through a well-defined lode of black and yellow ores.

Barton's shaft.—This shaft has now reached the depth of 141 feet. The lode in this shaft is 6 feet wide, of good ore, all fit for the furnaces. There is also a great improvement in this part of the mine since you were here. It will only require time and depth to make this a good mine. End going north from this shaft has been driven 123 feet through a strong lode composed of iron, gossan, and sometimes of rich grey ore; but as you are aware, there was nothing settled about the lode at the place where I commenced to drive, viz., at the 81-feet level.

Broomfield's shaft.—This shaft is now down 84 feet through a strong lode composed of quartz, mundic, black and yellow ore, and sometimes red oxides of a high percentage. I can honestly say the prospects of the mine at present are very good.

The Company's ground consists of 160 acres mineral lease and 640 acres mineral conditional purchase.

Machinery.—Two engines in course of erection, 40 and 35 h.p. nominal, four 20 h.p. boilers, winding-gear, stone-breaker and crusher, and one of Hancock's patent jiggers; one tank, excavated 1,000 yards, with an embankment which is capable of holding ten times as much water as the tank furnaces. One furnace completed and working well for about a week, and expect to have another completed and at work at the commencement of the new year.

Ore at grass, about 500 tons of about 16 per cent.; men employed, 41 miners; surface, including men and boys, 70.

JOHN WILLS,
Manager, Nymagee C.M., Dec. 16th, 1880.

I might here mention that Nymagee is better off for water supply than Cobar; there are several springs within a few miles of Nymagee, and there are also better facilities for the storage of water. Firewood for smelting purposes is also near at hand.

I also visited several other copper and mineral lands in these back blocks, but as they were not in work I will pass them over in this report. I, however, respectfully beg to draw attention to this part of New South Wales, which although perhaps too dry for successful agricultural purposes, is likely by the help of mining enterprise to turn out large mineral wealth. When railways and tramways pierce these at present sparsely populated parts of our rich Colony, then a new and prosperous area will be opened, and the Bogan, Cobar, and Lachlan Districts will largely contribute in placing New South Wales in the front rank of mineral-producing countries.

The country from Condobolin, but more so from Euabalong to Cobar, has the appearance of being highly mineral-bearing, and the same might be said from Parkes to Cobar. I picked up a few grains of stream tin between Euabolong and Nymagee, and in September last while on an official visit at Parkes two persons showed me rich specimens of green and blue carbonates, which they allege had been picked up by them on hills about 100 miles from Parkes, near the Bogan; they stated that they could trace the copper for nearly a mile along the surface. In this arid country, better known as the back blocks, all kinds of minerals are met with, the dryness of the districts being the only drawback to their development. Perhaps if boring for water was resorted to a permanent supply could be obtained.

Milburn Creek Copper-mine.—This mine consists of 40 acres, and is situated in the Carcoar District. New lodes have been worked, known as the north and south and east and west lodes. There are about 18 shafts sunk on this mine, the deepest of which is only 204 feet. On the bottom of this shaft the lode consists of solid yellow sulphites 11 feet 6 inches in thickness.

In the north shaft the lode consists of 9 feet yellow sulphite and 2 feet of black oxides; a horse, *i.e.*, a strip of rock, divides the two.

Taking the mine as a whole it has, to use a mining phrase, only been scratched or fossicked over, which is plainly visible throughout the whole workings.

Instead of opening out main levels and so following out a system of back stoping, only bunches of ore have been taken out in different parts of the mine, leaving blocks of ore between. This system must have made the working of the mine unnecessarily expensive.

The Company had three reducing furnaces, and at the time of my visit in September last they were erecting a refining furnace.

The Thompson's Creek Copper-mine in the Rockley District has again made a start, and instead of bringing their ore to the Cow Flat smelting works, they are erecting furnaces near their mine. There are several copper-mines still idle, which with good management and improved appliances ought to yield payable returns.

Bismuth.—A bismuth lode averaging about 8 inches in thickness was worked at Silent Grove, in the Vegetable Creek District, by Mr. Henderson, on the property belonging to Mr. Alexander Stuart, of Sydney. Another bismuth lode of a large size was also at work near Glen Innes, owned by Messrs. Ferguson & Co. I also saw carbonates of bismuth at Stuart and Co.'s, Elsmore Estate, on the M'Intyre River, Inverell District, and metallic bismuth near the Gulf, Vegetable Creek.

On the Northern tin-fields are also found gem-stones of all descriptions, diamonds, topaz (of which I brought a sample for the Museum attached to the Department of Mines), rubies, sapphires, garnets, zircons, tourmaline, and many others.

Antimony.—Attention has again been drawn to the antimony deposits at the Crudine, in the Sofala District. During the month of December the ground has again been taken up by miners, but so far no defined lode has been met with, but blocks of almost pure antimony are now obtained.

Gold.—The following districts were officially visited by me during the year 1880 :— North—Tenterfield, Glen Innes, Armidale, Uralla, Tamworth, and Copeland (Barrington) ; West—Mudgee, Gulgong, Wellington, Parkes, Forbes, Orange, Cargo, Carcoar, Cowra, Canowindra, Rockley, Bathurst, Sofala, and Hill End ; South—Grenfell, Young, Gundaroo, Queanbeyan, Paddy River (Tumbarumba), Adelong, Gundagai, and Temora.

The Long Tunnel Gold-mining Company at Uralla was the principal gold-mine at work in the Armidale District. This Company had expended nearly £5,000 in a drainage tunnel which commenced at Mount Jones, and is intended to intersect the heavy water-soaked drifts of Sydney Flat. This flat or rather table-land of a basaltic range has been partially worked years ago, but the individual miner not being able to cope with the difficulties appertaining to deep wet workings abandoned the whole of this auriferous ground, which laid idle for twelve to fifteen years, until the Long Tunnel Gold-mining Company started to work in April, 1876. This Company at first applied for 25 acres and 17 acres respectively; but finding their original capital insufficient, they increased their capital, and at the same time took up a large area of country under the 28th section of the Mining Act of 1874, on the Uralla temporary common, which was granted, no objection having been lodged against the Company taking possession of said land.

The total length of the tunnel, including drives on the top levels, was at the time of my inspection 1,555 feet in length, the half of which required blasting. I was informed by old hands of the Rocky River Gold-field that the prospects of this Company are excellent.

The Bullion Company.—This Company's works were suspended, pending a settlement of dispute between them and the Long Tunnel G.M.C. On this matter I reported fully on the 17th April last, therefore will not again insert it in this report.

There were also a few sluicing claims at the Rocky River, but they were idle for want of water.

Copeland (Barrington).

This gold-field has also been reported on by me in May last; I will therefore not go into details in this report. The quartz veins on the Copeland gold-field will always be expensive and difficult to work. The steep ranges on which these reefs are situated, and the porous nature of the ranges in the vicinity where the auriferous quartz veins are found, will always retard the progress of this field. To counteract this as much as possible, a system of tunnelling should be introduced where practicable, and each line of reef should have a battery as near to the mouth of the tunnel or site of mining operations as possible. Where tunnels could not be driven advantageously, short lines of self-acting tramways may be erected, especially as the timber for such purposes grows in abundance near every mine. By the adoption of this plan, the mines would be drained of water and the cost of carting and crushing the quartz would be considerably reduced.

Gold-saving appliances of the most improved principle should also be introduced, and add to this the strict enforcement of the labour condition on gold-mining leases, and Copeland would regain its former prosperity.

Gulgong.

This gold-field is still very dull, the several prospectors so far having been unsuccessful. There are however a few mines at Home Rule, Canadian, and other places which have given fair returns.

Parkes.

The quartz reefs in the Parkes district have of late employed a good number of men, and if the quartz veins were more thoroughly prospected Parkes would again be a prosperous mining district.

Forbes.

The South Lead Gold-mining Company carries on the principal mining operations in the Forbes district, but so far the Company has been unsuccessful. They have large machinery, but they have only one small shaft 240 feet in depth. On my last inspection in December last, I found the ventilation in this mine very bad, and I am afraid the Company will not be able to carry on work much longer unless they sink another shaft and connect with their present working shaft. Gold can be obtained throughout the whole workings, but the manager (Mr. Phillip Davies) has hitherto been unable to work the mine to the best advantage, owing principally to having only one small shaft.

There are a few other mines working at Queen's Lead, Bald Hills, and other places.

Carcoar.

Gold-mining in this district has lately come to the front, some rich quartz veins having been discovered near Milburn Creek.

Hill End.

Several mines are still working with varied success. The Krohman's Amalgamated Gold-mining Company are now down 713 feet with their perpendicular shaft, gold showing freely in leaders, although the crushings of late have not been payable.

The Star of Peace Mine.—This mine holds the largest area at Hawkins Hill, but want of capital has prevented this mine being developed. It is but reasonable to suppose that if working capital (say £10,000) were forthcoming, this may become one of the best dividend-paying mines in New South Wales.

The Patriarch mine is on the northern boundary of the Star of Peace mine. Mr. Charlton, the manager of this mine, in an easterly cross-cut 140 feet in length and at the depth of 250 feet, struck a new vein. The last 30 feet of the cross-cut were driven through a belt of veins, about fourteen in number. The most easterly vein in this belt, at first supposed to be the Frenchman's but now known as the New Patriarch vein, shows good gold, and varies in thickness in rolls from 2 inches to 2 feet. A crushing shortly before Christmas of 72 tons gave 214 ozs. of gold, or about 3 ozs. per ton. This leaves a profit of £483 11s. after all the expenses of raising and crushing are paid for. The mine is the property of Mr. Christopher Newton, of Sydney.

The Caledonia Mine.—Mr. Moustaka, manager, has also had some payable crushings. There are several other mines at work between Hill End and Tambaroora, but not much worth noting has taken place, and mining matters have rather a dull appearance at present.

Bathurst.

Prospecting is now carried on at the Bald Hills and other parts surrounding the city, but nothing had been found at the end of the year which could be considered payable.

Grenfell.

Mining matters are dull, but there are rich quartz reefs which only require capital and judicious management to make them once more bring forth their wealth, and make Grenfell what it ought to be—a prosperous mining town.

Young.

So far the expectations of the Burrangong Drainage Tunnel have not been realized, but the Company are still prosecuting their work. A Company has been formed to prospect with boring-rod the large flats known to be auriferous below the drainage tunnel.

Adelong.

This gold-field, one of the oldest in New South Wales, is still keeping up its yield of gold.

The Adelong quartz veins have been sunk on to a greater depth than the quartz veins of any other part of New South Wales. The Williams, North Williams, and Great Victoria mines have only just cleared working expenses during 1880. The whole of these mines are under the management of a Mr. Harford, who is certainly doing his best for the interest of these Companies.

At the deepest or over 800 feet level of the Great Victoria Gold-mining Company, in the most easterly cross-cut, a vein was struck in the early part of the year, which it was thought was of a permanent nature, but although this vein yielded several ozs. of gold per ton of quartz, it became so poor as to be not payable. When I inspected this mine in November last I endorsed Mr. Harford's opinion, namely, that the country in the lowest level was very unsettled and broken, there was no proper overhanging wall, and therefore the eastern cross-cut should be extended until the overhanging wall and solid country is met with.

Annetts Bros.—This Company were still obtaining payable gold below the depth of 600 feet.

The Research Company (Alexander Bruce, manager) were also on payable gold. There are also several other quartz mines still at work, with various success.

The principal quartz-mining property in the whole Adelong District—and I have good reasons to think in the whole of New South Wales—is now owned and in course of being developed by a Mr. Bolton Molineaux, one of the most enterprising and *bonâ fide* mine proprietors in the Colony. This gentleman, by his enterprise and perseverance, has done much to bring mining on a sound, legitimate, and renumerative footing, which deserves every legitimate and justifiable encouragement.

The Perseverance Gold-mining Company (Mr. B. Molineaux, proprietor). This property comprises the mine formerly known as the Prouse and Woodward's the Our own, the Adelong, and the Middle Reef, situated on the eastern side of the Victoria Hill, and known as the Old line of Reef, and Middle line of Reef, an area of 36 acres, or thereabouts, on which four shafts have been sunk to the following depths, viz.: No. 1 shaft or Prouse and Woodward, to a depth of about 840 feet; No. 2, or the Our own shaft, 375 feet; No. 3, or the Adelong shaft, 460 feet; No. 4, or the Middle shaft, 250 feet on the line of reefs.

On the No. 1 shaft levels have been put in north and south, commencing on the 240-feet level, extending south a distance of 176 feet, and north a distance of 133 feet, from which the vein has been stoped upwards to the cap of the reef, proving a thickness of from 4 to 12 inches, with an average yield of 1½ oz. gold per ton.

On the 375-feet level drives have been extended north from the main shaft a distance of 132 feet; thickness of vein, 10 inches, yielding from 1½ oz. to 3 ozs. gold per ton. The south drive from this level has been extended a distance of 300 feet, in which the vein averaged 1 foot in thickness, yielding 3½ ozs. per ton all through; this level has been stoped through to the 240 feet level.

On the 475-feet level from surface the vein averages 1 foot in thickness; the north drive has been extended 130 feet, and the south drive upwards of 400 feet, from which the vein has been worked and stoped up to the 375 feet level, yielding from 1 to 2½ ozs. gold per ton. The south drive on this level is still being proceeded with, showing stone of fair quality. The amount of ground opened on this level is about 530 feet.

On the 530-feet level from surface drives have been extended north 131 feet and south about 275 feet. On this level the vein averages a thickness of 15 inches, yielding about 1½ oz. gold per ton. This level is still in work; stone of a remunerative character shows in all the faces south of the main shaft.

On the 640-feet level drives have been extended north 65 feet and south upwards of 200 feet; on this level the vein averaged a thickness of 9 inches, with fair quality stone.

On the 740-feet level the north drive has been extended 50 feet; thickness of vein, 6 inches; stone of fair quality. Here seems to be a pinch in the cleavage of the rock or channel. In this portion of the mine at present progressive work only is being carried on, consisting chiefly of driving and sinking winzes from one level to another, in order to facilitate the speedy output of stone when stoping commences.

From this level the shaft has been sunk to the depth as above stated, which is still being continued in the ordinary way; but in consequence of the change in the temperature, the work is aided by the air-compressor and Burleigh rock drills. The working of these drills by compressed air has the advantage of supplying fresh air to the deepest part of the mine and the various levels, and is therefore a great boon to the miners working in these deep levels, as the fresh air escaping during the working of the drills has the effect of immediately dispersing all noxious gases resulting from the use of dynamite or other explosives. The prospects of the bottom of the shaft are encouraging, sufficiently so to induce the manager to continue the sinking to a greater depth. On the bottom of this shaft a lode exists well-defined and of fair quality, heavily charged with pyrites and other minerals showing gold frequently. It is intended to open out on the stone at this level.

All the underground works in this mine are in good order; the levels have been laid with iron rails up to the faces for conveying the quartz and refuse in trucks, which are sent direct from the face to the surface. The shaft is skidded and worked by cages.

Machinery.—One 14-horse power boiler and engine to drive air-compressor, with four Burleigh rock drills. A winding engine, 12-horse power, situated near No. 3 shaft, 1,600 feet from No. 1 shaft, but arranged so as to work with ease Nos. 1, 2, 3, and 4 shafts. The Our own, or No. 2 shaft has been sunk to a depth of about 375 feet, where a small vein of quartz exists, but not of sufficient value to induce the manager to sink this deeper at present, but at some future time it is intended to effect a communication between No. 1 and No. 3 shafts at some specified depth.

The Adelong or No. 3 shaft has been sunk to a depth of 460 feet, where there is a vein 20 inches in thickness, which yielded from 12 dwts. to 1 oz. per ton, which is considered payable now the proprietor has a powerful battery.

At this shaft, at the level of 420 feet, drives have been extended north 375 feet, showing a vein 12 inches in width, but of poor quality. The south drive has been extended 165 feet, with 14-inch vein, yielding from 15 dwts. to 1 oz. per ton. Winzes have also been sunk, proving the vein of the same quality and thickness.

The work in this shaft has hitherto been of a progressive character, with the view of a speedy and cheap output of stone from the mine.

The Middle Reef, or No. 4 shaft, has been sunk to a depth of 250 feet. At present no work is being carried on in this shaft, as this portion of the property is to be tested from another point at a lower level.

The Little Victoria, belonging to the same proprietor, a 20-acre lease on the Victoria line of reef, south of the Great Victoria and Research Companies, but immediately adjoining the Union Gold-mining Company, out of which, in former years, some very rich gold had been obtained. Work commenced on this property about twelve months ago; since then No. 1 shaft has been sunk and timbered up 175 feet, and No. 2 shaft is also down 200 feet, and securely timbered, also skidded for the working of cages. A 12-horse power engine is so placed as to work No. 1 and No. 2 shafts, which are distant from each other about 900 feet, the steam for the engine being supplied from two powerful boilers attached to the crushing-machine situated in close proximity on a portion of this property.

The prospects in No. 1 and No. 2 shafts are very encouraging, sufficiently so to induce the manager to both sink and drive, with a view of still further developing at a greater depth this portion of the property. At the time of my visit a large quantity of stone was at grass at the No. 1 shaft; but owing to the heavy strain laid on the management, this stone could not be put through for a time.

Machinery.—The crushing-machine which is erected on the bank of the Adelong Creek, near a point where the Victoria line of reefs crosses the Adelong Creek, has not only a command of the easiest and most economic transit of quartz from the principal mines, but also of a permanent supply of water in the driest seasons.

This crushing battery consists of a 45-horse power engine, supplying steam both for the battery and winding-engine as well as for a steam-pump which conveys the water from a well to the battery. There are four boxes of five stamps each; after the crushed stuff discharges through fine grating from the boxes, it runs over tables charged with mercury in ripples, and two sets of copper plates, each set 2 feet in width, after which the stuff passes into Chilian mills, of which there is one to each five stamps; from the mills it passes into Denny's pulverizer, of which there is also one to each five stamps; from here on the usual blanketing tables into a patent buddle for the concentration of pyrites, from which the residue afterwards passes into a Renfray's separator for further treatment; then into a reverberating furnace, thus reducing the loss of gold and mercury in crushing to the lowest minimum. This powerful and effective battery will no doubt enable the manager to treat stone, tailings, pyrites, &c., and which hitherto have been considered not payable, or waste, with profitable results; it will also have the effect of employing a large number of men.

Tramways.—A tramway has been laid through the whole length of this property (which commands the various shafts previously referred to), for the transit of quartz or other gold-bearing material to the crushing plant. The length of the tramway is 1 mile 18 chains. The iron rails were supplied by the Eskbank Iron Works, and the manager informed me the rails were guaranteed to carry a load of from 7 to 10 tons. A locomotive engine has been especially constructed to work this line. The locomotive is a splendid specimen of engineering skill, being a speciality for mining purposes. The weight of the locomotive in full working order is about 4½ tons. The principal portions of the machinery in connection with the battery, &c., has also been supplied by Mort's Dock and Engineering Company, and give entire satisfaction. The rails supplied by the Eskbank Company, however, do not give satisfaction, the strength not being equal to carry the locomotive, viz., 4½ tons. This has somewhat hindered the manager in completing this branch of the work, but means will be taken to rectify this as speedily as possible.

During the last twelve months the works in the above-described mining property have been purely of a progressive character. The number of tons of quartz crushed at the public battery has been 796 only, yielding 1,032 ozs. of gold. Since the proprietors' battery has been started, about 200 tons have been put through, with ten heads of stamps only, yielding 225 ozs. retorted gold. Total amount of stone crushed for the twelve months, 996 tons, yielding 1,257 ozs. of gold. This small output of stone during the year has been chiefly due to the great amount of progressive work done, in the opening of levels at greater depths, the erection of machinery, &c.

All the erections of the heavy machinery are built for the carrying on of extensive and successful mining works, in a manner which redounds to the credit of Mr. John M'Lennon, under whose care and guidance these works have been progressing; and I trust Mr. M'Lennon's hopes of making this mining property the best dividend-paying quartz-mining property in New South Wales will be realised. If honesty, energy, and ability will accomplish it, Mr. M'Lennon will certainly succeed. The former yields of gold out of this property have been very large, as statistics will show (see my annual report, Department of Mines, for 1876, on Adelong mines). There is, therefore, every reason to think that Mr. Bolton Molineaux will have a rich quartz-mining property as soon as his works are fully developed.

The Challenger Gold-mining Company, also on the old line of reef, is now on payable stone, and with their large new engine will be able to haul quartz more speedily from their lower levels than hitherto, and thereby pay dividends to the shareholders. This is also undoubtedly a valuable mining property.

So far, Adelong possesses the best quartz-crushing and gold-saving appliances in New South Wales. In my annual report to the Department of Mines for 1876 I gave full details of both Wilson & Co. and Williams's crushing-machines, as well as statistics of the yield of gold obtained from the Adelong quartz mines; I therefore consider it superfluous to again go into the same subject in this report.

In alluvial mining Mr. A. D. Sheppard's mine still keeps up its reputation as a rich gold-producing mine. Nearly 100 men are now employed in connection with same.

There are also a few parties at work below Mr. Sheppard's mine, and a large area taken up lower down the creek; but at the time of my visit in November last no active operations had been commenced.

TEMORA GOLD-FIELD.

The discovery of this gold-field has again drawn attention to the fact that large areas of payable and rich gold-bearing country lie still undisturbed in several parts of our Colony. Tracts of country between the Murrumbidgee, the Lachlan, the Bogan, and Darling Rivers have as favourable surface indications of rich auriferous deposits as the Temora gold-field and its neighbourhood.

Of late years the number of our gold-miners has steadily decreased, but the rich finds of gold at Temora have again brought many back into the rank of gold-miners and prospectors; and therefore indirectly the discovery of the Temora gold-field might be the cause of opening up other new gold-fields in New South Wales.

I met several old miners whom I had known at Ballarat, Bendigo, and other Victorian gold-fields, as well as on gold-fields of New South Wales, who for years had exchanged the pick and shovel for some less precarious employment, but they are now once more ranked amongst the gold-diggers of the day, and henceforth likely to remain such unless fortune smiles on them.

I am of the same opinion as many of the veteran gold-diggers, that although their occupation might be full of hardship and privation, it is an occupation by which the hardworking horny-handed man can raise himself from poverty to affluence, from an employé to an employer. I have, however, no hesitation in stating that there is not sufficiently profitable work for the large population congregated at Temora, which at the time of my visit could not be less than 8,000, because it must be remembered that miners' claims are now far larger than they used to be, about seventeen claims in length forming a mile; therefore, allowing a double line of claims at work for 3 miles, this would give 112 claims, or 612 men employed, but including Craig's lead, quartz reefs, &c., about 1,000 men were employed in December last.

The principal gold deposits were found in a narrow deep valley with diorite, schist, and conglomerate formation, the sinking being through layers of red gravel and clay, from 70 to 90 feet, with the exception of one or two claims near Parker's Prospecting Claim, viz., the Golden Gate, which is about 130 feet in depth. This no doubt is one of the ancient Gilgai Holes, as the deep ground cannot be traced from it.

The valley trends in a northerly direction, and does not contain a regular or continuous run of gold. This opinion is confirmed by the fact that short streaks or runs of gold are met with in an easterly and westerly direction across the valley, whereas I have already stated the valley trends in a northerly direction; to this must be attributed the several blanks or poor parts in or between reputed rich claims, as well as the apparently great width of the payable auriferous deposits in different parts of the valley, especially below Malony and Ley's prospecting claim.

Had the supply of rich auriferous deposits in the valley derived its existence from the quartz-reefs at the head of the valley and not from other sources the coarse samples of gold would also have been found in its vicinity, but such is not the case, as the coarse gold is found fully a mile below these quartz-reefs. This in my opinion proves beyond doubt that the rich deposits in the Temora Valley received their supply from sources close at hand, such as the several points or brows of hills on which rich surfacing might yet be discovered, as well as narrow rich quartz-veins. The gold throughout the valley is generally of a coarse description; the largest nugget obtained up to the date of my departure was 76 ozs. The gold is very little if any waterworn, some of the pieces, both large and small, being ragged, others flat, and intermixed with quartz, having the appearance as if at one time they formed part and parcel of small but rich quartz veins. Probably after the original shareholders have deserted their holdings and the fossicker has taken their place, some of these narrow quartz-veins may be discovered, from whence this valley received its golden treasures.

There are no less than four registered prospecting claims, viz., Parker & Co., Tynan & Co., Murray, Ley & Co., and Malony & Co.

Parker & Co., sinking 82 feet with thickness of a clayey wash 4 feet. They had about 350 loads of washdirt at grass, and picked by hand about 18 ozs. of gold.

Tynon & Co., half a mile lower down the valley, sinking 72 feet; thickness of wash 5 feet. They had about 1,400 loads of wash at grass, which was supposed to yield ½ oz. gold per load.

Murray, Ley, & Co., ½-mile below Tynon's, sinking 74 feet; thickness of wash, 6 to 8 feet. They had about 800 loads of washdirt at grass, which is considered payable; they had picked by hand about 80 ozs. of gold. A sixth share changed hands at the time of my visit in December last for £400 cash.

Malony & Co., ½-mile below Murray, Ley, & Co., sinking 80 feet; thickness of wash, 1½ foot. They have several hundred loads of washdirt at grass, which is considered payable. Between these prospecting claims, and above Parker's as well as below Maloney's reputed payable claims are at work, but I cannot go into details in this report as to the prospects, &c., of the several claims along the whole length of the valley; suffice it to say that the washdirt (auriferous strata) varies from 1 to 8 feet in thickness; and I might here mention an instance which occurred in Messrs. John Bolton & Co.'s spare ground, immediately below Murray, Ley, & Co.'s prospecting claim. Bolton & Co. had taken 6 feet of washdirt, and while engaged sinking a foot-hole for a prop, which is generally sunk deep enough through the swelling schists on to the harder rock, in this instance 2 feet, they came upon a nugget weighing 5 ozs. Since then this party are taking 8 feet of washdirt.

Considering that the length of the alluvial workings is about 3 miles, and the great thickness of washdirt taken, as well as the insufficient supply of water for prospecting the washdirt, it is but reasonable to suppose that several claim-holders will be disappointed when their present large heaps of washdirt are operated upon by the puddler; but there is no doubt whatever that good payable and rich washings will be obtained from different parts of this valley.

About ¼ of a mile in a north-westerly direction from Maloney's prospecting claim are situated the celebrated nuggety claims of Keating and Hayes, Nugent and Adams, and Buckley & Co. Out of these three claims about 1,500 ozs. of nuggets have been picked by hand. In the first week of December a nugget was found in Keating and Hayes' claim weighing 59 ozs. 1 dwt., which was 7 inches in length, 2¼ inches in width, and about 1 inch in thickness, not the least waterworn, but ragged, and had a half-turn or twist in it. Again, on the 6th December, at the time of my inspection of the underground workings of these three claims, Nugent and Hayes obtained a nugget weighing 64 ozs., and Buckley & Co. (the adjoining claim) obtained about the same time a nugget weighing 46 ozs. 18 dwts. 20 grs. I had these three nuggets in my hand, and by their appearance I cannot come to any other conclusion than that they came from some source close at hand, and not from the large reefs at the head of the Valley. I should not be the least surprised (and my opinion is based on personal inspections and observations made in the underground workings of the principal mines at Temora) to hear that narrow veins, even as rich as those at Hawkins Hill, Hill End, had been discovered. I am anxious that miners should try in or near these rich claims for the source of these rich auriferous deposits. So far all attempts to trace a run of gold into or out of these three rich claims have been unsuccessful.

At Bourke & Co.'s, a few claims below Murray, Ley, & Co.'s prospecting claim, a nugget 76 ozs. had been obtained. This is one of the richest claims at Temora. They have a large body or rather belt of veins in their alluvial workings, and I have no doubt that here too gold of payable nature will be found in narrow streaks and not through the whole body of quartz.

At the Deep Lead, Craig & Co's. prospecting claim was the only claim which could be considered as working on payable gold. By examination of the underground working, I think this to be an alluvial lode, similar to those worked in the Gulgong, Cargo, and Carcoar districts. Several claimholders were still sinking on the frontage, and some of them had struck water, which could be made available for gold-washing purposes.

At the time of my visit there could not be less than 10,000 loads of washdirt at grass on the various alluvial claims at Temora.

When once a plentiful supply of water can be obtained for mining purposes, more prospecting will be carried on, and new discoveries of gold are likely to be made, as the country for miles around has the appearance of being auriferous.

In the alluvial workings at Temora the swelling schist (pipeclay bottom) and the glossy fissures (greasy heads) are a source of danger to the miner, which can only be obviated by filling the ground behind when worked out, adopting a system of securing the ground in squares (pigstying), also to keep shafts sunk ahead of the main workings, by which persons below could escape in case of danger. Parts of the workings at some of the claims had fallen in through insufficient timbering, but there is abundance of timber close at hand, therefore there cannot be any excuse for not properly securing the underground workings.

Quartz Reefs.—The quartz reefs discovered up to date of my inspection were principally in the diorite formation, at or near the head of the valley, and are several feet in width, but as far as I could observe the gold generally carrying in a narrow streak, but probably as depth is obtained the gold might become more evenly distributed throughout the body of the quartz. The large quantity of quartz which could be raised at a comparatively small cost might yield payable returns.

The future prospects of Temora are such as will place it on a permanent footing, and what but a few months ago was a mere sheep-walk will henceforth rank amongst the permanent towns of New South Wales, surrounded by a prosperous mining and agricultural population.

Although the population of Temora will perhaps be considerably reduced, and some of the tradesmen who helped to erect the buildings in the town, which consist of one street nearly 3 miles in length, named Upper, Middle, and Lower Temora, will also leave to follow their avocation in some other parts of the Colony, but there will still remain a large mining population, especially as the alluvial workings are patchy and nuggety—they will be worked over again several times, and new payable finds will be made both in alluvial and quartz perhaps where they are least expected.

Reservoirs, dams, and puddling machines are erected on every available and suitable site all over Temora, and miners are only awaiting the first heavy downfall of rain to commence operation.

Barmedman Reef.—These reefs, which are situated about 25 miles from Temora, have been at work for about eight years, and if the surrounding country was thoroughly prospected, there is very great probability that payable results would be the consequence.

REPORT ON THE STAR OF PEACE GOLD-MINING COMPANY'S MINE.

This Company's property consists (including some land held under tribute) of about 16 acres, and embraces some of the principal parts of the famous Hawkins Hill. Since the Company bought Fisher and Beard's mine, their property is bounded on the north by the Patriarch mine, in which gold has lately been struck, and the proprietors of which in December last obtained out of 72 tons quartz, 214 ozs. of gold; the Star of Peace also holds nearly all the eastern country of the richest mines at Hawkins Hill.

There are several shafts sunk in different parts of the Company's land, but with the exception of the main shaft they are shallow; perhaps on the whole few shafts having reached a greater depth than 400 feet. The main shaft of the Star of Peace has been sunk vertical 200 feet, and from thence it has been continued on the underlay of the Star of Peace vein for 580 feet; total depth of main shaft, 780 feet.

At the 765 feet level and 114 feet south of the main shaft, a winze has been sunk 56 feet in depth, making the greatest depth obtained in any part of the Company's property 821 feet. From the 280-feet level to the 750-feet level, there is not a single cross-cut to the east, but at the 765-feet level a cross-cut has been driven to the west 40 feet in length, in which no less than fourteen veins were cut, some of which showed gold; however, in the higher levels only three veins are met with, therefore pointing to the probability that an entirely new belt of payable gold-bearing veins may be discovered to the west.

The Star of Peace Company have obtained several rich patches of gold and have paid £14,000 in dividends; but from my own personal observation, having been through the Company's working scores of times, I believe the mine has never been systematically worked, principally due to want of working capital.

Formerly the whole of the mines at Hawkins Hill were held under miners' rights, each miner's right holder being entitled to 30 feet on the line of quartz vein by 300 feet in width. The parties seldom consisted of more than four men, consequently the largest mine (claim) would be about 120 feet along the veins by 300 feet in width: and still some of the shareholders in these small claims (generally working miners) in a year or two became rich men—owners of thousands of pounds sterling.

The rich finds made in Carroll & Beard's as well as in Krohman's mine, the proprietors of which obtained out of 436½ tons of stuff 24,079 ozs. 8 dwts. of gold, valued at £93,616 11s. 9d. sterling, and Beyers & Holtermann's mine, the proprietors of which in 1873 obtained out of 415 tons of vein stuff 16,279 ozs. 6 dwts. 3 grs. of gold, valued at £63,234 12s. sterling, and the Monte Christo (Hurley & Moore's) mine having a vein out of which were taken several crushings averaging 200 ozs. per ton. In my presence Mr. James Moore, of Hill End, handed Mr. Alfred Fairfax 12½ ozs. specimens, which were obtained from the 200 ozs. and the Star of Peace veins.

Rawsthorne's, Brown's, Cock & Attwood's, Hickson, Creighton, & Beard, Rampant Lion, Paxton, Star of Peace, Meyers, Fisher & Beard's, Oxon's, Rowley's, Crown Prince, Mathewson, and several other mines, some of which have now been incorporated with the Star of Peace Company, had payable and very rich crushings, in consequence of which speculation became rife, the public became frantic, and the memorable mining mania set in. Companies were floated in all directions, but the capital often finding its way into the pockets of original shareholders, as well as brokers and promoters, leaving little if any for actual working expenses.

Any visitor to Hawkins Hill must be fully impressed with the idea that a large amount of capital and labour has been wasted through the number of shafts sunk, &c.; but, as I have already explained, the whole of the Hawkins Hill mines were held by working miners under miners' rights and not under lease as at present. In my opinion, the resources of the Hawkins Hill mines are not exhausted, but their partial failures may be fairly attributed to the small area of the mines, each Company being obliged to keep a staff of officers, such as legal and mining managers, boards of directors, &c.—to the want of actual capital—and last, but not least, to the cheese-paring, false economy, and primitive style in which the whole of the Hawkins Hill mines have hitherto been worked. It is a notorious fact that on the whole Hill End gold-field not one shaft is or has been worked with cages, but the quartz, debris, water, and even working miners are raised and lowered by the primitive style in buckets.

The main shaft in the Star of Peace mine is not even centered, although I have often made complaints and drawn the mining manager's attention to this important fact. While inspecting the underground workings of the Star of Peace mine I have seen a full bucket coming up the shaft, and the empty bucket in its descent, instead of passing, would rest on the full bucket and be hauled up again perhaps 50 to 100 feet, until the weight of the rope on the empty bucket would pull it over, and in its fall smash timbers, break the rope, and otherwise do a large amount of damage, independent of being a danger to persons employed in the mine. The same thing often occurred with baling water, the (kibble) bucket having to be wound fully 700 feet would come in contact with the empty bucket, and spill most of the water. Had money been forthcoming for centering this shaft the Company would have been the gainer.

In the Star of Peace Company's property there are some fourteen veins known to be auriferous, and in some very rich patches of gold have been obtained. With the exception of the Star of Peace vein, few of them have even received a partial trial. To thoroughly develop this property requires capital sufficient to sink at least one perpendicular shaft 9 x 3 feet in the clear, with three compartments, two for cages and one for pump and ladder-way to a depth of at least 1,000 feet, to open main levels on different veins, and cross-cut east and west, at least every 50 feet, in different parts north and south throughout their property. Their present machinery, which consist of a 15-stamp battery with two boilers of 15-horse power each, and two winding-engines of 10-horse power each, is also insufficient for winding, pumping, and gold-saving purposes.

Before closing this report I beg to reiterate the opinion expressed by me on the Adelong mines in my annual report for 1876, and which might be applied with equal force to the Hill End mines, viz.,—As long as Companies will persist in the suicidal practice of starting the workings of their mine with a nominal instead of an actual capital—as long as they persist in declaring dividends without having any capital reserved for times of need—so long will there be almost a certainty of failure. When a mine is paying, sinking and cross-cutting should be forced ahead, but instead of which, the bunch, run, or patch of gold is generally worked out, dividends declared, and no capital reserved to meet the expenditure for future development; consequently as soon as the gold-producing powers diminish, development is stopped, or perhaps where power under deed of settlement has been reserved, a call of one or two shillings per scrip made, after which the mine is often condemned as worthless, no matter how shallow or undeveloped it may be; and last, but not least, this defective system of working a mine discourages the mining manager, gives him no justice, as it affords him no opportunity of bringing his ability and practical knowledge to bear on the development of the mine under his charge. Mining is not such a reckless or uncertain venture, provided capital is judiciously laid out under a local manager who has energy, ability, and practical experience which is requisite to guide a new undertaking through its first and greatest difficulties. Many good mines have been ruined through want of working capital and good local management; although it cannot be denied that many mines have been misrepresented by unscrupulous persons.

I also beg to draw your attention to the fact that nearly all the rich Hawkins Hill mines are within a mile of the Turon River, and in this short distance they are from 1,200 feet to 1,500 feet above the level of said river; therefore it is obvious that a main tunnel could be driven on the Hawkins Hill quartz veins, leaving backs from 1,200 to 1,500 feet overhead. Powerful quartz-crushing and gold-saving machinery could be erected near the mouth of the tunnel, and tramways laid from the face of the workings to the crushing machine. The water which now has to be brought to the surface (causing heavy expenditure) would drain through the tunnel, and could be utilized for quartz-crushing and gold-saving purposes.

The geological formation of Hawkins Hill and Hill End Gold-field has been fully reported on by Mr. Geological Surveyor F. F. Pittman, in the annual report of the Department of Mines for 1879.

REPORT ON ELSMORE, ABOUT 8 MILES FROM INVERELL, ALSO THE KAROULA AND OTHER TIN-MINES.

On the former property, which consists of three mineral conditional purchases of 320 acres each, £18,000 has been expended by the original shareholders. The cost of raising the tin at the mine was estimated at £45 per ton, whereas the price of tin in Sydney fell to £35 per ton, in consequence of which the Company collapsed. The present owners (Union Tin-mining Company) intend to combine mineral, agricultural, and pastoral. In many parts of this property coarse tin can be seen on the surface. Time no doubt will solve the problem how to work said mine profitably.

Karoula.—This mine consists of 100 acres of conditional purchased land, and is situated near the banks of the Macintyre River. Here thousands of tons of conglomerates, thickly impregnated with tin, are visible; but the disintegration of the quartz pebble, clay, and granite, which form the principal parts of this cement, has hitherto not been attended with anything like success. The machinery attached to this mine is a 10-horse power engine, with 5-stamp battery, centrifugal pump, and patent tin-dressing appliances. This property, although at present idle, must become valuable as a tin-producing mine.

Gilgais.—This mine, which received its name from an adjoining creek, is about 5 miles from Inverell, near the Tingha Road, in the tertiary basalt formation. There is only one prospecting party working on payable tin, but I am confident that if this neighbourhood was thoroughly prospected the result would prove satisfactory.

In my last report from here I mentioned that Mr. Grove (representative of the Union Tin-mining Company) was working the Butchard Reef. A trial crushing just finished yielded out of 8 tons of vein-stuff the satisfactory return of 2 tons 2½ cwt. of probable 73 per cent. tin. I have been informed by Mr. Horswill, the mining manager, which is endorsed by Mr. Grove, that the total cost of raising, crushing, &c., amounts to about £80, therefore leaving a large surplus for the Company. The ore in the present instance is crushed very coarse, which is the best method to adopt; formerly the ore was crushed to a pulp, the consequence was the tin and tailings floated away together. If long blanketing tables were added below the shoots or sluice-boxes, and the blankets cleaned about every hour, a large quantity of flour tin, which still escapes, could then be saved.

I have already stated the reefs or veins, and the basaltic country, must be looked to as the future mainstay in the tin-producing industry of this district.

Another matter to which I beg to draw your attention is the apparent patchy nature of the tin workings here. I firmly believe that these tin leads or runs are not so patchy as their present appearances seem to indicate, but that large deposits of tin will be met with opposite the barren places, and what now seems to be a series of patches will become continuous but zigzag leads or runs of tin. This will no doubt be the case at Cope's Creek, Middle Creek, Irwin and Martin's, and other places now almost considered worked out.

REPORT ON COPE'S CREEK.

The principal workings along the course of this creek are from Stony Creek to the township of Kimberley, a distance of about 7 miles, but some payable deposits have been found for 25 miles. Several parties, both Europeans and Chinese, are still at work; of the former Billins and party, and of the latter Litchfield's tributors, are the principal. The tin is found either on the surface, or by stripping and sluicing. In some instances the earth has to be removed from 10 to 20 feet in depth before the tin-bearing strata can be reached. The deepest payable tin workings at this field are about 60 feet.

At Stony Creek parties are now tunnelling in the tertiary basalt, with fair prospects of success. A party is also sinking in this basalt, and down about 70 feet.

At the Stannifer, near Middle Creek, about 7 miles northerly of Tingha, several parties of Europeans and Chinese are profitably employed. Of the latter, two parties are on a rich lead of tin, which by appearances would yield about 1½ cwt. per cubic yard of wash. Thickness of wash varies from 1 to 3 feet; width of lead at present unknown. Two European parties have also struck tin, and there is a probability that a lead of tin will be traced from the Stannifer through Hill End into Middle Creek. What strengthens this belief is the discovery of tin by Cooper and party, in the tertiary, about 50 feet sinking, fully a mile north-west of Stannifer.

The Stannifer Tin-mining Company spent large sums of money; they obtained about 200 tons of tin on the surface, but whether through mismanagement or other causes the Company collapsed. Hundreds of tons of conglomerates impregnated with tin are still lying about the surface.

I could cite several other parts, such as the Ponds, Sutherland Waters, Darvan Branch, Dick Jones's Lead, Irwin and Martin, the Gilgai's, Boro, Pine Ridge, and others, on which parties are at work obtaining payable tin, but which would be unnecessary for the purpose of this report.

The recent rise in the price of tin has given quite an impetus to tin-mining. A few months ago the local price of tin varied from £26 to £30 per ton, now local buyers are offering £45 per ton. The consequence is that tin-bearing country which a few months ago was considered worthless is now worked with payable results. Prospectors can now be found in all directions from Bundarra to Tingha, and for many miles around the latter place. At Bundarra some parties got lately rewarded by obtaining payable tin at Cohen's Gully, Spring Gully, Moses' Gap, and Sandy Creek, and I have no doubt more important discoveries will be made.

Tin-mining in these districts is certainly in its infancy; those parts which presented the least difficulty and expense have only been worked, whereas we have here vast tracts of unbroken territory which have been very little prospected—in fact with the exception of Dick Jones's lead and a few tunnels, very little has been done to pierce through or tunnel under the basalt. That these ancient river-beds now covered by the volcanic fluid contain large deposits of tin there is but little doubt.

An instance brought under my notice here is worth recording, as it might act as an encouragement to others. Some years ago Mr. Wilkinson, geological surveyor, while on an official visit to this place, pointed out and strongly advocated the sinking through the basalt at a place near Stony Creek which was likely to contain payable tin. Little notice was taken at the time of this advice, until a plucky miner named Richard Jones started to sink through the basalt, and at the depth of 60 feet obtained a rich deposit of tin. The lead was named Dick Jones's after the energetic and persevering prospector. I have no doubt there are several leads of tin similar to Dick Jones's, but to thoroughly prospect these tin-fields we require capital; at present nearly if not all the parties out prospecting are working miners who, although like the gold-miner (of which the tin-miner is an identical type) are full of energy and perseverance, still they cannot afford to go to any great expense, nor yet to lose the value of their labour for a length of time.

There are also several tin reefs or veins well worthy to receive proper attention, namely, the Buchard, Reeves's, Pond Gully, and others. Some of these veins produce solid masses of tin, and still—with the exception of the Buchard, worked by Mr. Grove, and the Pond Gully, worked by Chinese—they are all deserted.

These reefs, which ought to be tried at a greater depth, combined with those vast tracts of basaltic country still untried, must by force of circumstances become the mainstay of our tin-mining industry.

I am aware that during the mining mania large sums of money have been squandered; but nevertheless, with capital judiciously invested, and prospecting carried on in a systematical manner, our tin-mining industry must flourish and become a source of profit for the capital so invested.

Blocks of mineral lands varying from 20 acres upwards have been taken up by parties who have not the slightest intention of spending any capital on the development of same, but who simply hold these blocks in the hope that parties will either prospect on them or near them. My attention has been drawn to this matter, and many complaints have been made to me, not only by miners but also by influential persons of this district. I would respectfully suggest to the Honorable the Minister for Mines that list of mineral leases similar to those of gold-mining leases should be issued giving the names of the lessees and the applicants of leases; also, the number of men to be employed on each lease. They should be posted outside and inside the Mining Registrars' and Wardens' offices, for the information of the general public. Those lists issued a few months ago have proved very beneficial to the gold-mining industry; and if the same method was adopted with regard to mineral leases it would be the means of developing large tracts of mineral lands which are now locked up, and on which the labour conditions are won and have been evaded for years past.

Tingha, the principal township of the Cope's Creek tin-fields, is *via* Newcastle and Tamworth, about 360 miles from Sydney. The whole town is on a mineral conditional purchase owned by the Britannia Tin-mining Company; the inhabitants pay ground rent to said Company, they are therefore loath to improve their holding; the consequence is that Tingha, which ought to be a flourishing town, is entirely crippled in its advancement. A secure title should be given to the holders of town property at Tingha.

During last month 111 mineral licenses have been taken out, and twenty applications have been made for mineral leases at the Mining Registrar's office, Tingha.

I have still to visit Elsmore and other places before finally leaving here for Vegetable Creek.

REPORT ON THE VEGETABLE CREEK TIN-FIELD.

I do myself the honor to inform you that the principal mining properties on this field are mineral conditional purchases taken up previous to the mineral reserve being proclaimed, but I have much pleasure in acknowledging that the local representatives of said properties have given me every facility and assistance to inspect their respective mineral holdings. The timbering in their underground workings is very fair, and is in my opinion safe (with the exception of the timbering of shafts and the proper fixing of ladder roads, and the erection of platform thereon, which requires attention); the safety of the workmen has been well cared for. An accident occurred some time since in the Graveyard Creek Mine, owned by the Vegetable Creek Tin-mining Company, by which a miner was severely injured in a drive by part of the roof falling in. The place where the accident occurred was shown, and the whole circumstances of the case related to me by a Mr. Kirkin, the manager of the present tributers, and I cannot come to any other conclusion than that the said accident was not due to the neglect of the Company, but was solely due to the party injured.

Nearly all the mines in this district are now worked on the tribute system, the tributers receiving a fixed price per ton for tin ore, according to the nature and richness of the ground—the owners generally finding machinery, tools, &c.

The Mines.

The Great Britain Tin-mining Company, Captain Williams, manager. This property consists of about 400 acres mineral conditional purchase, and is situated in almost a natural basin, near the Tent Hill Range. This range probably formed the source from which the principal tin deposits of the Vegetable Creek received their supply. The workings of this mine have hitherto consisted of surfacing and shallow stripping, but Captain Williams is now sinking in a dyke over 80 feet deep, and should he be successful in meeting with a payable tin deposit a new and permanent future would be opened for his Company. The present monthly output is about 30 tons of tin ore. Machinery—10-horse power engine, which drives one of Wesley's sluicing and tin-cleaning machines; the latter has been so very minutely and ably described by the efficient and energetic Mining Registrar (Mr. George Gower) in the annual report of the Department of Mines for 1876, that I think it superfluous to redescribe the same in this report.

The Little Wonder (O'Donnell & Co.) have some tributers on shallow ground; their monthly output is about 6 tons; but in addition to this nearly the whole township of Vegetable Creek has been built on their mineral conditional purchase, for which they receive a large income in shape of ground rental. Area, 100 acres.

Rothschilds (Moore & Co.), Captain Chandler, manager. This property consists of about 240 acres mineral conditional purchase and mineral lease. The mine is worked by tributers; monthly output, about 30 tons of tin ore. Machinery—A 6-inch centrifugal pump driven by a 10-horse power engine, which lifts the water 37 feet in height, the water then runs through a six sluice heads iron flume into a reservoir on the higher portion of their property, and is afterwards distributed by means of ground sluices to the different sites of operations.

The Graveyard Mine (Vegetable Creek Tin-mining Company), A. Cadell, Esq., managing director. This Company has 1,300 acres mineral conditional purchase. The mine is worked on the tribute system, depth nearly 100 feet; present monthly output about 20 tons of tin ore. The wash is from 3 to 10 feet in height. The lead has been worked for several hundred yards in length, some of which has been very rich. The lead is in the basalt formation and runs in patches, probably ancient water-holes or gulches; out of one of these about £35,000 worth of tin ore has been taken by the Company. Machinery—A 10-horse power horizontal steam-engine, which drives an 8-inch centrifugal pump, raising the water from a reservoir close at hand to a height of 39 feet; the water is then conveyed by over 700 yards of canvas fluming to the different sites of the tributers' operations. There is also a 5-horse power horizontal winding engine. This Company's property is very valuable. The deep lead under the basaltic formation is at once interesting and instructive; it seems to have taken its course or origin near the Tent Hill Range, flowing westward, where it can be traced in different localities for many miles towards the Rocky Creek, through fertile valleys and gentle sloping or rugged basalt hills. Imprints of leaves are often found in the pipeclay immediately under the basalt, but no fossil bones or fossil nuts have been met with, nor yet has any fossil wood been found in these deep leads. I, however, have asked the miners here to have a good look-out for any fossils, and hand them over to the Mining Registrar here for transmission to the Department of Mines. There is another interesting feature in these deep leads which, although not conclusively proven, is instructive and deserves strict observation, namely, that the ancient watercourses under the basalt seem to take the same courses and bends as our present watercourses in the immediate vicinity of the basalt, fitting as it were into each other (this opinion is confirmed by a conversation I had with Messrs. Cadell & Wesley, gentlemen highly interested in mining in this district), and if it once can be conclusively proved that such is the case it will form a good guide for prospecting the basaltic formations. A map of the Vegetable Creek Mines furnished by Mr. Gower (the Mining Registrar here), in the annual report for 1877, shows these features plainly.

The Y Waterholes.—This property consists of 540 acres mineral conditional purchase (A. Cadell, Esq., J.P., proprietor). The property laid idle for some time, owing principally through the low price of tin. Mr. Cadell having prospected this property was well aware of the existence of payable tin. Lately a tribute was let to Francis and party who, at the depth of about 40 feet, bottomed in the basalt, and obtained a prospect of 7 lbs. of tin per prospecting dish;

although this cannot be considered an average yield, still it is thought the ground will be more than payable, and probably this will be traced from block 59 through blocks 61, 63, and 75.

Rose Valley.—Griffiths and Hammond (tributers of O'Donnell & Co.) were the first in this locality to meet a rich reward for their energy and perseverance. After prospecting for some months they sunk a shaft through decomposed basalt and pipeclay; when at a depth of about 66 feet they came upon a rich deposit of tin, the wash being about 1 foot wide and of such clayey nature as to require puddling. The yield is about 2 cwt. of tin per cubic yard of wash,—the latter containing clay, basalt, quartz, and other pebbles, which is intermixed with cement thickly impregnated with tin. I am informed that in a few months these tributers obtained about £10,000 worth of tin.

Through the good fortune of this party several new and rich discoveries were made at the Rose Valley.

My attention was drawn to a shaft in this mine where in the sinking a complete change occurred in the character of the basalt, and which seems to indicate two distinct flows of lava. The party is at present sinking to ascertain whether such is really the case.

I think that Griffith and Hammond's lead, which at present takes the shape of a horseshoe or wide patch, will be found extending in both easterly and westerly directions, and that Griffith and Hammond, Fox & Co., Nagle & Co., and Patridge, Morton & Co. will form one and the same lead. If careful search was made, traces of tin deposits would be discovered to connect all these workings as one lead.

Nagle & Co. and Fox & Co. each hold a 20-acre block under tribute from Mrs. Fitzgerald. Depth of sinking, 82 feet in Nagle's and 74 feet in Fox & Co.'s shaft. These mines are situated on the northern boundary of the Garden Palace Mine, Captain W. H. Wesley's, and westerly of Griffith and Hammond's. Thickness of wash about 3 feet, yielding about 2 cwt. of tin per cubic yard of wash. They obtain with about forty men's work 3 tons of tin per day. The sinking is like that of Griffith's, and Nagle and party think that after working out the present level they will sink again and reach another tin deposit still deeper, believing there are two distinct flows of lava. This will be watched with great interest, still I think it is doubtful, and it will be found to be what miners term an overhanging reef.

The Vegetable Creek Tin-mining Company at Rose Valley, southerly of Griffith's, have a party of tributers at work. They have also a small 5-horse power engine. The present yield of tin is not great, still it is a valuable property.

About ¼ of a mile from Nagle & Co., Conelly & Co. struck tin at the depth of 90 feet, and about three-quarters of a mile westerly from Nagle & Co. Patridge, Morton & Co., have struck payable tin at the depth of 70 feet, with a thickness of wash 1 foot, the lead being 60 feet in width. 100 loads were washed during my stay here, which yielded 8 tons of tin ore.

There are other parties sinking higher up the hill, but they were driven out by a strong flow of water before the bottom was reached.

In the above mines gem stones such as sapphires, &c., are sometimes found, which is not the case in the Garden Palace or Wesley's deep lead.

The Garden Palace Mine, W. H. Wesley, proprietor.—This mine is situated at Rose Valley, and consists of 180 acres mineral conditional purchase. Captain Wesley held this land since the year 1875, and has worked the same continually. At first a shallow lead was worked in this ground, but not with great success; Griffith and Hammond however struck tin, and Captain Wesley's brothers sunk a shaft to strike Griffith and Hammond's lead, but without success; they then sunk another shaft, which brought them on a sidling of a reef, and in following this sidling they came on rich stanniferous wash. Their whim shaft was sunk through 90 feet of basalt, some of which was very hard. This basalt rested on layers of pipeclay, on which imprints of various kinds of leaves were found. This pipeclay rested on a fine sandy wash about 6 feet in thickness containing payable tin. This wash again rested on a coarse waterworn wash 9 feet in thickness containing far richer tin than the 6 feet immediately above. Total depth of wash 15 feet, and of sinking 132 feet. The latter wash looks precisely like that in our present river beds, and consists of quartz and other silicate pebbles or rocks, waterworn, angular, and other shapes.

Captain Wesley is only extending his tunnels (drives) in the sandy wash about 6 feet in height, leaving 9 feet of coarse and rich wash under foot.

At my suggestion three monkey shafts were sunk in different drives through the coarse wash, which has shown in every instance a rich deposit of tin ore. Total thickness of wash 15 feet, which at the lowest estimate will yield 2 cwt. of tin ore per cubic yard of wash. 533 feet in length by 6 feet high and 6 feet wide have been driven in the top and poorest wash, which yielded 40½ tons of tin, bought by the smelters at 75 per cent. The lead is now proved for 300 feet in length by 80 feet in width, but Captain Wesley intends to extend his prospecting drives for some considerable time, leaving the blocking out to the future. The machinery erected is still in a crude state, as the mine cannot be considered opened out.

Workman & Co., tributers of Captain Wesley's, are about 40 chains west of Wesley's whim shaft. They are now down 190 feet through basalt, the latest indication being very favourable that tin will be struck. Should the latter be the case, the lead will be considered proved for at least 2,600 feet in length.

About 1½ mile south-west of the Garden Palace Mine a party of tributers are prospecting on Reynolds' conditional purchase. They are sinking on a high basaltic hill, and are now down about 190 feet without any sign of bottom. The basalt here is of a different character than that at Rose Valley, so much so that the prospectors were greatly discouraged in their sinking operations by being informed by several persons that they were not in basalt but had bottomed. I, however, believed it to be basalt, and forwarded a sample to Mr. Wilkinson, geological surveyor in charge, who pronounced it basalt, and advised the party through me to sink on. Tin can be found on the surface in the immediate vicinity of the shaft; there is, therefore, every likelihood that tin will be discovered under this basalt.

At the Pipe-clay, Graining & Co. are also prospecting.

At the Grampian, 6 miles westerly of Vegetable Creek, only a few parties are now at work. The same might be said of the Three-mile, 1 mile westerly of the above.

On Spring Creek, about 9 miles westerly of Vegetable Creek, O'Donnel & Co. are out prospecting on a red range (decomposed basalt). The shaft is now down 80 feet, and the surrounding country has excellent appearance of being stanniferous.

Kangaroo Flat (Halls Bros.) This property is mining conditional purchase. The mining operations are carried on by a tunnel about 2,000 feet in length through the northern sidling of a basaltic hill, but at the date of my inspection only about 500 feet of the tunnel was in use, the remainder having partially fallen in. Three shafts were also at work, out of which payable tin deposits were raised by means of a horse whip. The deposit consists of cemented wash, which requires crushing.

Machinery.—A 12-horse power engine which drives a 9-stamp battery, and one of Wesley's tin-extracting machines; the latter is a most excellent machine, but Mr. G. Gower, the Mining Registrar here, has fully described it in the annual report of 1876.

The Sugar-loaf Mountain, about 1 mile from Kangeroo Flat, is now idle, but I saw a large heap of wash thickly impregnated at Halls Bros. machine for the purpose of being tested to ascertain its value.

The Surprise, about 16 miles westerly from Vegetable Creek, at present owned by O'Donnel & Co., I found only one party at work. I explored the old tunnels of this mine, which is situated on a high hill, and am surprised that nearly the whole of this property should lay idle; small patches of tin can be seen throughout the old tunnels. At present the wash, which is in some places 20 feet high, and consists of round basalt, quartz and other boulders of all sizes, has to be carted to the water for puddling purposes, which at all times is tedious and expensive, whereas there is every facility for the introduction of hydraulic sluicing. I am informed that a race from the Strathbogie would only be 12 miles in length; if so the outlay of capital would be small in comparison with the benefits which would accrue therefrom. On this and the surrounding hills are large deposits of tin-bearing wash, and there is an excellent fall for the tail race.

Tin has also been discovered further westward by the Springs and Rocky Creek.

A geological survey of the whole district would be most beneficial to the mining community, and the public treasury would in turn be benefited thereby.

This district has certainly a great future in mining before it; its prosperity however must greatly depend on the following:—

On a constant and sufficient supply of water for sluicing purposes.

On the thorough and systematical prospecting of the stanniferous basaltic country stretching from Vegetable Creek through Strathbogie to Rocky Creek, and still more westerly.

The development of the numerous tin lodes in this district.

A supply of water could be obtained from the rivers Severn or Deepwater. If a Company with sufficient capital was formed to bring the water from above-named rivers by means of main race with branches extending to the different accessible points of this tin-field, the results would be remunerative and satisfactory.

There is always some difficulty in prospecting a basaltic country, the sinking being generally hard and requires blasting, therefore capital and labour should co-operate, and by combined forces wrestle from these ancient watercourses those hidden treasures now laying dormant.

Lode mining is more for the future; when the alluvial tin deposits become scarcer, force of circumstances will compel the tin-producers to give their attention to fresh sources of supply, lode mining will then be developed, tin lodes which are now considered worthless will then be looked after, and lode mining become the most important branch of our tin-mining industry.

The alluvial tin ore of this district averages about 73 per cent. of tin.

Smelting works.—The smelting works of Messrs. Reid and Moffat, situated at or near Tent Hill, about 2½ miles east of Vegetable Creek, are a great boon to the mining community here. They employ a large number of men, they give and cause a fair local price in tin ore, and I am informed by some of the principal tin-producers here that they obtain from these smelting works as high percentage as ever they obtained from the smelting of Sydney or Newcastle. Messrs. Reid and Moffat are now erecting another large furnace in addition to the former one.

FURTHER REPORT ON THE VEGETABLE CREEK TIN-FIELDS.

In my last report I mentioned the fact that Griffith & Hammonds, at the Rose Valley, were sinking through the bottom on which their shallow or upper level rested. On the 1st instant they struck rich wash after sinking 34 feet through a second layer of basalt. Their upper wash is 70 feet and their lower wash 104 feet from surface. I forward by first opportunity specimens of wash, also of the rock sunk through.

At Mole Tableland, the Gulf, Bladder Arm Swamp, Back Creek, Bald Rock, Black Swamp, Glen Creek, Nine-mile, Tent Hill, and other places, small parties of miners are working on alluvial tin deposits, mostly on shallow workings.

Tin lodes.—There are undoubtedly some rich tin lodes in this district—at the Grampion, the Gulf, Mole Tableland, and other places. The Dutchman's, at Mole Tableland, is really rich; there are also some very rich lodes at the Gulf, and, in fact, through the district; but, as I have already stated in my former reports, lode tin-mining is an industry for the future, and will probably not be thoroughly developed until such time that the produce of tin ore from alluvial mining becomes scarcer. The present rich finds at the Rose Valley, and the great probability of the basaltic country westward of the abovesaid valley being more thoroughly prospected and found to contain payable tin ore, will put a check for some time to come on lode-mining; but that eventually this class of mining will become an important industry there cannot be any doubt.

At Stuart's Silent Grove there are several tin lodes which are at present idle, but they cannot be said to have been developed. The deepest shaft sunk on the principal lode is 70 feet deep, but at the time of my visit this shaft was full of water, therefore I am unable to give my personal opinion as to size and richness of the lode at the deepest part. There is also a bismuth lode in this property, which is about 8 inches in width. Men were working on this lode during the time of my visit, and Mr. Henderson, the mining manager, informed me that he had already sent some bismuth to Sydney and had more ready for transit (specimens of which I will forward to you). The manager also requested me not to publish any reports concerning the Silent Grove property unless permission was granted by his employers in Sydney.

Silent Grove is about 30 miles N.E. of Vegetable Creek, and the road is very rough and tedious to travel. It leads over high rocky mountains and across several creeks and swamps, and I should imagine that during the wet season Silent Grove could not be reached by any teamster; and should any breakage occur in the machinery it would be a great expense and difficulty to replace the same.

To develop this property at least from £5,000 to £6,000 is required; any less sum would only be a waste of capital.

Machinery.—A 15-h.p. engine with 10 head of stampers of 5 cwt. each, a Willoughby tin-dresser, &c., also a saw-mill, the whole of which is kept in excellent order and is a credit to Mr. Henderson, the manager. The water for the use of machinery is pumped by a Californian pump out of a natural waterhole.

Report on the Boorook Silver Mines.

The Golden Age, a 2-acre lease (Horton & Co.), is at present the principal silver-producing mine of this district. They have two shafts, the depth of which is 90 feet and 127 feet respectively; in the latter a little bottom water has made its appearance. There are two silver-bearing veins in this mine, one strikes 10 degrees south of west and the other north and south, intersecting each other at an angle. The ore consists of chlorides on the upper levels, but from the 80-feet level downwards there is a 2-feet wide well-defined lode of sulphites.

Mr. Davey, a gentleman of undoubted ability, who has had the management of extensive silver ore reduction and extraction works in Spain, is now a co-partner in the Golden Age mine, and has by the crude appliances to hand succeeded in reducing the loss of silver in the tailings to a very low percentage.

From the 4th April, 1878, when the first sample of 13 ozs. of silver was sent to the Mint, up to the 3rd instant, 1,815 tons of ore treated realized 33,915 ozs. of silver. Since the 1st of January the Company sent the following samples of silver to the Mint:—

January	1,515 ozs.
February...	1,745
March	1,625 „
April	959 „

And on the 10th instant I attended a cleaning-up at the reduction works, which yielded out of 22 tons ore 627 lbs. amalgam or 1,350 ozs. of silver, which gives a total from the 1st of January up to date 7,194 ozs. silver. Total number of men employed, about twenty.

The machinery consists of two portable engines of 6-h.p. and 4-h.p. respectively, a 3-stamp battery, 4 Wheeler's pans, and a Berdan; there are also several settling pits. There is, however, more machinery on the road, such as separators, &c., and it is also intended to erect a furnace for calcining purposes.

The Silver King, a 4-acre lease (No. 1 South Golden Age), is worked on tribute; deepest level, 87 feet. Machinery in connection with this mine is now in course of erection on the Sawpit Gully, and consists of a portable 10-h.p. engine, 3-stamp battery, four iron amalgamating barrels, and separator.

The Golden Age, No. — North (Hall & Co.), are now tunnelling on a lode of chlorides fully 6 feet wide, from which the yield is expected to realize at least 15 ozs. of silver per ton. The ore is to be treated at Hall & Co.'s reduction works.

The Nil Desperandum (Hall & Co.), a 6-acre lease, is a very promising reef, one part of which was worked some years ago, and contained some rich patches of gold and silver. Assays made from the ore at grass have given for the close-grained stone from 24 ozs. to 60 ozs. of silver per ton, but for the honeycomb stone 160 ozs. per ton. Experts consider the stone now raising will realize 100 ozs. of silver per ton.

By present appearances, this property will become very valuable as a rich silver and also perhaps gold-producing mine.

The ore is to be treated at Hall & Co.'s machinery. The latter consists of a 15-horse power engine, with two batteries of five stamps each, two Denny's grinders and amalgamators, a Berdan, and, if necessary, a furnace for calcining is to be added.

The machinery itself is erected on the bank of the Cataract River, and therefore commands a permanent supply of water; there is also plenty of room for the extension of the works, should that be required. This is certainly one of the very best machinery sites on the whole field. The whole of these works could be finished within three weeks, but Mr. E. W. Hall is delayed on account of some machinery being still on the roads.

There are also several other leases on the Nil Desperandum line, which may yet prove valuable.

The Golden Crown, a 4-acre lease (Moffat & Co.), yielded some rich gold and silver; greatest depth, 78 feet. The Company, at the time of my visit to the mine, were cross-cutting to the east, and before my departure from Boorook, I was informed that a payable reef had been struck in the cross-cut.

The Addison, No. 1 South (Moffat & Co.), are sinking on the side of the reef; present depth, 62 feet; they intend sinking considerably deeper before cross-cutting into the reef, which in places is over 10 feet in width. Several leases north and south on this line are now lying idle.

The John Moffeet, a 4-acre lease, from which high assays of silver have been obtained, lies idle, pending the erection of furnaces.

Moffeet & Co.'s machinery is situated at Saw-pit Gully, and consists of a 7-horse power engine, two Wheeler's pans, and concentrator; a furnace for calcining the ore is just finished, and will be ready for operation in a few days.

There are also several other reefs at work, such as the Grand Junction, the Hurley, the Holterman, the Woolshed (Johnson's), the Nevarra, and others. I saw some rich gold specimens at Hurley's Reef, and Mr. Johnson showed me some rich silver specimens from the Woolshed Reef.

In addition to the above-cited machinery, MacGregor & Co. have a 12-horse power portable engine, 3-stamp battery, a Wheeler's pan, and Berdan, on the Boorook Creek.

A Mr. Miller is also erecting machinery near the Boorook Creek Falls, which is to be driven by a 25-feet water-wheel, a 5-stamp battery of half a ton each stamp. The ore is to be brought from the battery into the pits; from there to the drying floors into the furnace, from which it is to be reground in a Chilian mill and put in the amalgamating barrels, of which there are eight, and from these barrels into the separator. This is no doubt an imitation of the Frieburg system for the treatment of silver ores.

Mr. Johnson is also erecting a small battery near the Woolshed.

It will be seen by the above that nearly every mine-owner is ambitious to have his own machinery, and thinks himself qualified to treat the ore of his respective mine.

I think it would have been much better for the prosperity and development of our silver mines if, for the present at least, one large establishment (instead of all the miniature ones) for the reduction and treating of silver ore had been erected; the ore could have been sold by the mine-owners according to assay, which could be taken and checked by both buyer and seller.

This system works well in the principal mining centres of Europe, and I cannot see why it should not be beneficial to our mining community here.

At present it would be premature to quote the real value of these silver mines—none have reached much over 100 feet in depth. When a mine is paying, such as I suppose to be the case with the Golden Age mine, sinking and cross-cutting should be pushed ahead, and every economy used for raising the ore; for instance, instead of having four men continually at the windlass pulling up ore, a common horse whip would be more expeditious, *i.e.*, a horse pulling a single rope over a pulley which is attached to a pole; by these means sufficient money could be saved to sink the shaft.

Every vein found on Boorook contains silver, and some, although at present idle, have assayed very high; still the greatest drawback is want of capital, which it is to be hoped will be forthcoming ere long.

On the Lunatic Reef, some 15 miles from here, rich finds of gold have of late been found.

REPORT ON THE COPELAND.

I have visited the mines at Copeland and the Bowman, but as Messrs. Wilkinson and Pittman, geological surveyors, have fully reported on the formation, extent, and future prospects of this gold-field, I will confine myself to pointing out some of the causes acting against its development.

1. The steep ranges, which are covered with a dense scrub, and the great expenditure to the miner in clearing and forming roads to the crushing machines.
2. The flow of water in the mines, especially in the wet seasons, which is caused through the porous nature of the country in the vicinity of the quartz veins.
3. The high price of crushing and of carting (even after the road is made) to the crushing machines.
4. The want of gold-saving appliances after the blanketing tables for the treatment of blanketing, &c.

There are at present four crushing-machines of 10-stamps each on this gold-field—one at the Bowman, one at the Right-hand Branch, and two at the Left-hand Branch.

These machines are at least half of their time idle for want of quartz to crush, and still in the face of this several mines now lying idle were pointed out to me as having obtained 15 dwts. per ton out of several crushings.

A system of tunnelling should be adopted where practicable, and each line of reef should have their own small battery (say of 5 stamps each) as near the mouth of the tunnel as possible. Where tunnels could not be advantageously driven, short lines of self-acting tramways should be erected from the mining operations to the crushing machines, especially as the timber for such purposes grows here in abundance near every mine. By the adoption of the above plan some of the mines could be effectively drained, and the cost of carriage and crushing would not exceed their present cost of carting the quartz to the available quartz-crushing machines. The saving would soon pay for the extra outlay, and quartz now considered worthless pay dividends.

As long as the miners at Copeland are under the heavy expenditure of about ½ oz. of gold per ton of quartz for carting and crushing alone (as is the case at the Prince Charlie Reef, where the owners pay £1 sterling per ton for crushing, 11s. per ton for carting, and men's labour for filling the drays, breaking the quartz, and watching the crushing machine) so long will this gold-field remain in a dull state, and cannot be expected to flourish.

At the Mountain Maid, Prince Charlie, Hidden Treasure, and some other mines, I noticed the quartz containing chloride of silver, as well as arsenical and iron pyrites, which must sicken the mercury and cause loss of gold in crushing.

I would strongly advise the mining community here that, instead of the primitive appliances in use here for quartz-crushing and gold-saving purposes, Wheeler's pans and concentrators, or some other grinding or amalgamating machinery should be added to every battery; the cost of working the same, allowing for deterioration of machinery, chemical salts, &c., would be small indeed in comparison to the great benefit they would confer on the whole mining community.

From the Hidden Treasure Mine assays of blanketing gave 7 ozs. 15 dwts. 4 grs. per ton, and from the tailings 3 ozs. 15 dwts. 3 grs. per ton. These are, therefore, facts which should speak for themselves.

REPORT OF THE GEOLOGICAL SURVEYOR IN CHARGE.

REPORT OF PROGRESS OF THE GEOLOGICAL SURVEY DURING THE YEAR 1880.

DURING the past year several important portions of the Colony have been examined and reported upon by the Geological Survey.

When inspecting certain lands in the county of Camden, I observed that the western boundary of the Coal Measures crosses the Great Southern Railway line near Barber's Creek. As this point, therefore, limits the inland extension of the coal formation on the railway, it is a matter of great moment to the Government how near to it may workable seams of coal occur, from which the inland railway requirements may be supplied. Hitherto the locomotives have been supplied with coal brought either from the Northern or Western Coal-fields; so that if coal could be readily obtained in the locality now referred to, the annual saving of expense to the Railway Department would be considerable. In the ravines on both sides of the railway line a seam of coal crops out immediately under the Hawkesbury rocks, but it contains too many partings to be profitably worked; it is not improbable, however, that workable seams may occur in the underlying coal measures.

In company with Mr. Pittman I examined the coal formation in the Dubbo district, to ascertain if it were necessary to reserve lands in that locality for coal-mining purposes. Immediately about Dubbo the formation consists of the Hawkesbury formation covered in places with basalt and auriferous Tertiary gravels, but on the Talbragar River, about 12 miles north-east of Dubbo, the Hawkesbury rocks are seen overlying the Coal Measures containing seams of inferior coal; there is little doubt, therefore, but that the Coal Measures will be found underlying the Hawkesbury rocks in the vicinity of Dubbo, but at what depth can only be ascertained by boring or sinking. In this locality we have the furthest inland extension of the coal formation on the Great Western Railway from Sydney to Bourke.

The geological features of those portions of the Colony which have been examined by Mr. E. F. Pittman, geological surveyor, viz., the Clarence, Richmond, Eden, Wellington, and Dubbo districts, are described by that officer in his reports herewith appended. (*Vide* Appendices 1, 2, 3.) It appears that a large extent of the country drained by the Clarence, Richmond, and Brunswick Rivers consists of coal measures which are of newer formation than those of the Newcastle or true Coal Measures of the Colony. From the fossils obtained—*Tæniopteris daintreei*, *Thinnfeldia*, *Zeugophyllites*—it is believed that the Clarence series are of Mesozoic age. Mr. Pittman saw several seams of coal, but they proved to be of such inferior quality as to be valueless. It is not improbable however that workable seams may occur in the lower strata of the series. (*Vide* Appendix 2.)

Since the publication of Mr. Pittman's report on the Dalmorton gold-field (Appendix 3), referring to the locality as a promising field for mining enterprise, the auriferous quartz reefs there are again receiving attention with a view to their being worked.

The Murrumbidgee, Kiandra, West Bogan, Temora, and other districts were examined by Mr. Lamont H. G. Young, F.G.S., to whose investigations I shall again make reference. (*Vide* Appendices 4, 5, 6, 7, 8.) But it is now my painful duty to record the great loss that the Department has sustained in the mysterious disappearance of Mr. Young and his assistant, Mr. Max Schneider. Mr. Young proceeded, under instructions, to report upon the newly discovered Bermagui Gold-field. After inspecting some of the gold workings there, he, with (it is believed) Mr. Schneider and three others, left Bermagui on the morning of the 10th in an open boat. The boat was seen about 10·30 a.m. off the coast, and about 4·30 p.m. of the same day it was discovered wrecked upon some rocks on the coast, about 8 miles north from Bermagui, without any trace of Mr. Young and his party; and though a very exhaustive search has been made, under the direction of the Inspector General of Police, aided by Mr. T. C. Binney, sent by the Hon. the Minister for Mines from the Department, and by numerous volunteers, the fate of the party still remains a mystery.—The three men, Towers, Lloyd, and Casey, who accompanied Mr. Young (one of whom, Towers, was owner of the boat), were well known and respected married men living in the district. Mr. Young was a very able officer, and the great interest and zeal which he manifested in his work rendered it always a pleasure to recognize him as a colleague.

During the early part of the year Mr. Young was engaged upon an examination of the Upper Murrumbidgee country, and also the Kiandra Gold-field. In the latter occur extensive auriferous alluvial deposits, overlaid by wide-spread sheets of basalt. Hydraulic mining is the most efficient method required for working these gold deposits profitably, but only at certain times of the year is water obtainable for the purpose, as the deposits occur so near the summit of the dividing ranges. The head of the Tumut River seems to be the only source of large supply whence water could be brought by gravitation, but between it and the gold workings are several long gaps or depressions, too deep to be flumed across, which would therefore necessitate the use of pipe conduits. This fact, taken in connection with the occurrence of heavy falls of snow in winter, would render the supply both costly and uncertain. Mr. H. B. Sullivan, L.S., mining surveyor, assisted by Mr. Max Schneider, made the necessary surveys, with levelling, to ascertain the feasibility of obtaining a water supply for this gold-field; his report is appended. (Appendix 9.)

Mr. Young in his report has given a very interesting description of the character of the various geological formations in this elevated tract of country.

The result of Mr. Young's inspection of the antimony and silver bearing lodes in the Macleay district is given in Appendix 4. Mr. Young's opinion was that considerable but very irregular deposits of antimony will be found in this district. The lodes traverse highly disturbed Devonian strata. The silver lodes occur in the parishes of Yarrahapinni and Warrell, and traverse both Devonian strata and granite. They consist of quartz containing arsenical pyrites, zinc blend, iron pyrites, and galena; though the reefs have not hitherto proved payable, some of them are considered to present favourable indications.

In June Mr. Young, with Mr. J. E. Carne as assistant, proceeded to examine the country lying between Parkes and Cobar. The greater part of this tract of country consists of palæozoic rocks, in which new deposits of copper, gold, tin, &c., are likely to be discovered. Besides describing the geology of this district, Mr. Young's report (Appendix 6) gives an account of the nature of the copper lodes at the Mount Hope Mines, Great Cobar Copper-mine, Nimagee Copper-mine, Copper Hill at West Bogan, and Honeybogle. Appendices 7 and 8 contain respectively Mr. Young's reports upon the Temora Gold-field and the nature of the gold deposits at Mount Werong, in the county of Georgiana.

The Sydney International Exhibition closed on the 20th April. The exhibits sent by the Department of Mines received the following awards:—

For Mineralogical Collection	1st special prize, Gold Medal.
„ Geological „	1st award.
„ Collection of Coals	„
„ Tin	„
„ Timber	„
„ Silver Ore, Boorook Committee	„
„ Plumbago Crucible Co.	2nd award.
„ Great Cobar Copper Co., Copper	1st award.
„ Collection of Maps, Plans, and Sections	2nd award.

Small collections of minerals were made up for several of the foreign representatives and others. These collections will practically illustrate the nature of our mineral resources; and I have already had inquiries from persons whose attention was drawn to certain minerals, of commercial value, in a small collection forwarded to London.

By your direction I prepared, with the assistance of Mr. H. T. Wilkinson, Curator of the Mining Museum, and other officers of the Department, a verycomplete collection of minerals, rocks, and fossils, illustrative of the mineral resources and geology of New South Wales, for display at the Melbourne International Exhibition. The Department also exhibits a series of maps of gold-fields, &c., together with a first edition of the geological sketch map of New South

Wales, compiled from the original maps of the late Rev. W. B. Clarke, M.A., F.R.S. A small edition of this map has been printed for distribution at the Exhibition. Besides the above, the extensive collection of the timbers of the Colony, which was exhibited by the Department at the Sydney International Exhibition, has been sent on to Melbourne. To this collection was added some pieces of large piles of ironbark, taken by Mr. Howison, of the Works Department, from the old Parramatta Dam. After lying in damp ground for about sixty-five years, these piles are seen to be almost quite sound, thus showing the durability of the red and white iron-bark timber.

At the request of the New South Wales Commissioners for the Melbourne Exhibition, this Department undertook to provide for the display of the mineral exhibits sent by private persons. Amongst the most important of these may be specially mentioned the fine natural size sections of the seams of coal and kerosene shale. It is unnecessary, however, to refer individually to them, as they are described in detail in the published catalogue. The whole of the mineral exhibits are displayed in one portion of the New South Wales Court, and were arranged by myself, assisted by Mr. J. E. Carne. Mr. Carne has been left in charge of the Mineral Court. I had the honor of being present with the Executive Commissioner, Dr. Renwick, M.P., and others, at the ceremony of the opening of the Exhibition on the 1st September, when His Excellency the Marquis of Normanby, Governor of Victoria, and other distinguished persons, visited the New South Wales Court. From the opinions expressed by the numerous visitors, it is anticipated that the Colony will benefit considerably by this exhibition of her mineral resources.

On 8th July I took delivery from Mr. J. Coghlan of the core of rock obtained by means of the diamond drill from the bore put down on the Sutherland Estate at Port Hacking. This bore-hole attained a depth of 2,170 feet from the surface; some of the shale beds pierced in this bore, and also in that at Moore Park, were found to contain some fresh-water ostracoid shells of the genus *Estheria*, which may be of Triassic age. Dr. Cox has given a description of these fossils, in an able paper read before the Linnean Society of New South Wales on June 30th, 1880.

. In the Hawkesbury formation at Mount Piddington, as well as in several other localities, I have observed large and small angular boulders of shale, embedded in a very irregular manner in the conglomerate and sandstone beds; these shale-boulders almost immediately overlie thin beds of shale, from which they have evidently been torn up by the action of moving ice. In this view of the origin of these boulder beds, my friend Professor von Haast, M.D., F.R.S., concurs. Dr. von Haast, who is an authority upon glacial deposits, suggests that the shale beds were chiefly disturbed by ground-ice,—an opinion which the mode of deposition of the several strata evidently confirms. Since reading my paper on this subject before the Royal Society in December 1879, I have seen these boulder-beds in almost every locality where the Hawkesbury formation occurs. On account of these glacial phenomena Dr. Ottakar Feistmantel, Palæontologist to the Geological Survey of India, has correlated the Hawkesbury series with the Talchir (Karharbari) beds of India, and the Bacchus Marsh sandstones of Victoria. However, the characteristic plant, of the genus *Gangamopteris*, of the two last-named formations has not yet been found in the Hawkesbury series. The fossils found in these shales are *Thinnfeldia* and *Phyllotheca*, with numerous obscure impressions of plant-stems and leaves; and of fishes, *Cleithrolepis granulatus*, and *Myriolepis Clarkei*.

Some time ago the late Rev. W. B. Clarke forwarded to Dr. Ottakar Feistmantel a collection of fossil plants from the Coal Measures of New South Wales. Many of these have been described and figured by Dr. Feistmantel in the German "Palæontographica."

In this work Dr. Feistmantel has thus rendered important service in elucidating the palæontology of the great coal series of Australia. Dr. Feistmantel has also communicated to the Royal Society of New South Wales a very interesting and valuable paper, *Notes on the Fossil Flora of Eastern Australia and Tasmania*, which was read before the Royal Society on the 4th August, 1880.

In accordance with the decision of the Commissioners for the Paris Exhibition, 1878, the collection of New South Wales gems exhibited at Paris have been divided equally between the Department of Mines, the University, and the Australian Museum. These gem-stones form a valuable addition to the Museum of Mines. I would here beg respectfully to point out the necessity that exists for sufficient room for displaying the extensive collection of minerals, rocks, and fossils belonging to the Department. The work of arranging and classifying these cannot be carried out under existing circumstances, as we have but little more than room for storing the cases in which the specimens are packed up.

Some samples of infusorial earth have lately been discovered near Barraba by Messrs Henry and N. E. Glover. An analysis made by Mr. W. A. Dixon, F.C.S., shows that this earth may be suitable for use in the manufacture of dynamite; but the sample sent, which I submitted to the Melbourne manufacturers of dynamite, proved to be rather too compact in texture; however, when this diatomaceous deposit (which is said to be extensive) is examined, it is probable that better samples will be obtained. The diatoms consist almost entirely of *Melosiræ*.

Scarcely a day passes without persons submitting to this Department samples of minerals for opinion as to their value; the information has always been given, and when necessary assays have been furnished to the applicants. (*Vide* Mr. W. A. Dixon's report.)

Appended is a list of contributors during the year to the Museum of Mines. (Appendix 11.)

An important discovery of artesian water has been made in the flat country between the Darling and Paroo Rivers, by Mr. David Brown, manager for the Messrs. Officer Brothers, on the Wee Wattah and Mullyeo Runs, in the Albert District. Mr. Brown has described to me the manner in which he obtained the water by boring with Wright and Edward's water auger; and from Mr. Licensed Surveyor Vickery's official report to the Surveyor General, and from notes kindly furnished me by Mr. H. A. Gilliat, Government Inspector of Tanks, it appears that the bores have been put down near some natural springs known as "mud springs." There are many of these mud springs throughout the Darling District; they form irregular mounds from 30 to over 130 feet in diameter, and rise to an elevation of 5 feet or more above the level of the surrounding ground. At the Wee Wattah Spring, a 4-inch bore was put down from the bottom of a shaft, 110 feet deep, situated about 6 chains to the west of the springs. The bore after reaching a depth of 34 feet from the bottom of the shaft struck a copious supply of water, which rose in the boring tubes, and flowed from them at a height of 26 feet above the surface of the ground, and at first at the rate of about 15 gallons per minute; but occasionally the bore became choked with fine sand, of which there was a great discharge, which lessened the outflow of water. The temperature of the water remains constant at 82 degrees Fahrenheit. The outflow from the bore does not in any degree affect the pools of water lying on the surface of the spring. The shaft passed through clay and drift, until water was struck at 110 feet.

At Mullyeo, 14 miles N.E. from Wee Wattah, Mr. Brown bored to a depth of 49 feet from the surface, through drift with no clay. Water was struck at 17 feet from the surface, and it rises to a height of 4 feet above the surface, flowing at the rate of 12 gallons per minute. The temperature of the water is about 63 degrees Fahrenheit. Some fragments of bones (probably of Diprotodon) and fossil wood were obtained from the borings.

As stated in a previous memorandum on the official papers referring to this subject, I am of opinion that artesian water will be found extensively throughout the flat country in this district. The valley of the Darling was in late geological times much deeper than it now is, and the present surface level has resulted from the old valley having been so far filled up with gravel, sand, and loam swept from the surrounding higher lands. A large amount of the rain-water which falls upon the watershed of the Darling soaks into these vast alluvial deposits, and as the underlying bed rocks are of a comparatively speaking impervious nature, the accumulating water in the drifts is forced up in places to the surface, and form the so-called "mud springs," which appear to be natural artesian springs. I think, therefore, that the success of the Messrs. Officer's bore at Wee Wattah is evidence that not only may artesian water be obtained elsewhere in the Reserve No. 23, and without injury to the present bore, but also that it may be struck by boring in other parts of the flat country between the Darling and Paroo Rivers.

I have, &c.,
C. S. WILKINSON,
Geological Surveyor in charge.

The Under Secretary for Mines.

APPENDIX 1.

Report by Edward F. Pittman, Esq., Geological Surveyor.

ON the 13th January I travelled *via* Wallerawang to Cudgegong, where I inspected a number of portions of land applied for by auction within the gold-field. The formation here is Silurian, the ranges on the south having a capping of Carboniferous conglomerates and sandstones. There is little or no mining going on here now. From Cudgegong to Mudgee the road is over similar country, and very little mining work is being done. From Mudgee to Hargreaves the country consists of altered Silurian slates and sandstones, covered for several miles with Pleistocene drift (water-worn quartz pebbles). On this road about 10 miles from Mudgee is a blue mottled rock, showing plainly the conglomeratic origin of the altered rock so characteristic of Hill End and other localities, for here the mottling is at once seen to be due to the almost regular outline of the pebbles once forming the conglomerate. While here I made a general inspection of the gold-fields in the county of Wellington, and recommended certain alterations in the boundaries of the gold-field reserves.

From Mudgee to Gulgong the road is chiefly over Silurian rocks. From Gulgong to Wellington the first 24 miles is over Silurian formation, then a stretch of about 12 miles of granite to Mitchell's Creek, and this is again succeeded by Silurian rocks with occasional dykes of diorite. On leaving Wellington by the Dubbo Road the formation for the first 15 miles is Siluro-Devonian; after this succeeds the Hawkesbury sandstone, with occasional patches of Pleistocene drift overlaid by basalt in places.

I made an examination of the country around Dubbo, with a view to the formation of a temporary reserve for coal. From Dubbo the road (*via* Cobborah) to the Castlereagh lies over Hawkesbury sandstone, with overlying Pleistocene drift and patches of basalt. About Heane's Station there are outcrops of what appear to be the true coal measures. These are well seen in section with small seams of poor coal at Ballimore, on the Talbragar, about 6 miles beyond Mr. Heane's, though I could find no fossils except some faint impressions of plant stems. From here to the Castlereagh at Mundooran the same description of county is met with, and there is no change as we proceed along the river to Gilgandra. On the road from here back to Dubbo we see the commencement of the sandy tertiary plains which stretch away westward to the Darling. About 7 miles from Dubbo cappings of basalt again make their appearance, and continue at intervals to the township. South of Dubbo the Hawkesbury sandstone extends for about 10 miles (with occasional cappings of basalt) and then gives place to rocks of Silurian age.

The country between Dubbo and the Castlereagh appears to be formed of a coal basin, the centre of which is situated a few miles north of Dubbo, and it is quite probable that the thin seams of coal seen in the cliff at Ballimore may overlie others of a payable character.

At Murrumbidgere I rode out to Mitchell's Creek over 9 miles of Carboniferous country, then 3 miles of Devonian limestone succeeded by altered Silurian slates. Outliers of Carboniferous sandstone (Hawkesbury) exist, capping the hills of limestone and Silurian slate, and in consequence of this the boundary is irregular and rather difficult to trace.

In places where the Carboniferous sandstone is capped with basalt, the soil resulting from the latter frequently exhibits a peculiar formation very much resembling a ploughed field.

From Wellington to Buckinbah the road passes for the first 6 miles over conglomerate and hard contorted purple slates, which are of Devonian age, probably the analogues of the Old Red Sandstone. To these succeed about 3 miles of blue Devonian limestone, and then altered slates and conglomerates with intrusive dykes of granite. At Buckinbah an irregular deposit of copper ores (carbonates and sulphides) occurs in the granite, which has been worked to a considerable extent as an open quarry.

March 24th, visited the Fish River Caves, and inspected the work done by the contractors for the improvement of the caves.

On my return to Sydney, I continued the preparation of the geological map of Hill End.

April 26th, visited Singleton and inspected a portion of coal land applied for at Rix's Creek.

Rode out to Mirannie from Singleton. The road through the parish of Sedgfield is over conglomerates, dipping N. 70° E. at 12°, with intrusive dykes of felspar porphyry. At Reedy Creek the sandstone and conglomerates dip N. 45° E. at 30°.

May 19th, proceeded to Twofold Bay for the purpose of inspecting some country at the back of Eden, which was said to be carboniferous. The coast at Twofold Bay consists of contorted Silurian rocks, and overlying these is a narrow patch of sandstone dipping south at a low angle, and reaching from Panbula Lake to west of the township of Eden. From its lithological characters it might be an outlier of either the Hawkesbury sandstone or the Devonian rocks of South Gippsland, but on account of its isolated position and the absence of any fossils it is difficult to say to which of these two periods it should be assigned, though in either case there is no evidence pointing to the occurrence of coal, the true coal measures being absent.

June 9th, travelled from Carcoar to Lyndhurst, and inspected the western extension of the Belubula gold-field, a portion of which reserve I recommended to be revoked. The formation consists of Silurian slates and conglomerates, with diorites and Devonian limestones. Some of the diorites have evidently been derived from sedimentary rocks by metamorphism. In one instance on this gold-field I found a bed of coarse conglomerate, which, in places, was entirely converted into diorite.

June 20th, proceeded to Grafton, and examined the Dalmorton and Cunglebung reefing district, my report upon which is appended.

September 26th, proceeded again to Grafton, and thence made a geological examination of the Clarence, Richmond, and Tweed Rivers. My report upon these districts is also appended.

December 11th, accompanied Mr. Wilkinson to Dubbo, and assisted in making a further examination of the coal basin.

E. F. PITTMAN,
Geological Surveyor.

APPENDIX 2.

Report by Edward F. Pittman, Esq., Geological Surveyor.

Sir,
Department of Mines, Sydney, 6 December, 1880.

I have the honor to inform you that, in accordance with your instructions, I have made an inspection of the geological features of the north-eastern portion of the Colony drained by the Tweed, Brunswick, Richmond, and Clarence Rivers, and have now the honor to report to you the result of my observations thereon.

This tract of country stretches from the sea to the New England table-land on the west, and from the Macpherson Range on the north to the watershed between the Clarence and Bellinger Rivers on the south.

The most noticeable feature of this district to a visitor is its remarkable agricultural richness. On the alluvial land along the Clarence, the cultivation of sugar-cane and maize is carried on to an extent that is astonishing to any one unacquainted with the resources of the district. On the Richmond also there is a vast extent of rich country which is fast being opened up for agricultural purposes; and again on the Tweed, owing to the enterprise of the Colonial Sugar Company, cane-growing has become a settled industry.

From a geological point of view, the Clarence and Richmond district is remarkable for the occurrence of a large carboniferous basin. The rocks forming this basin consist of pebble conglomerates and sandstones. The first or lowest are the conglomerates, which are composed of coarse pebbles derived from Siluro-Devonian rocks which underlie the whole of the basin, and which flank it upon the south and west in high ranges. Above these conglomerates occur coarse sandstones more or less impregnated with iron, and having interstratified beds of shale containing coal seams. The fossils which I found with the coal from these beds show that they are much more recent than the Newcastle series. They are probably of Jurassic age, and therefore similar to the Mesozoic beds of Queensland and Victoria, as I found *Tæniopteris Daintreei*, *Thinnfeldia odontopteroides*, *Sphenopteris*, &c., which are characteristic of the latter beds.

I examined the outcrops of a good many seams in various parts of the district, but in no case did I find sufficient thickness or purity of coal to constitute a workable seam from a commercial point of view. As the rocks dip from all sides towards Grafton as a centre, I am of opinion that if a bore were put down there it would thoroughly test the district for coal, and would also be of great interest as a means of prospecting for artesian water, the water supply of Grafton being a subject which is engrossing much attention just now in the district.

In the Siluro-Devonian country to the south and west of this carboniferous basin are such gold-fields as Dalmorton and Cunglebung, Cangai, Solferino and Lionsville, Tooloom, and Lunatic.

I have already informed you (*vide* my report of the 7th August last) of my opinion of the Dalmorton and Cunglebong reefing district. It is satisfactory to be able to state that since the publication of that report, mining matters in the locality have evinced signs of improvement, and there is every reason to hope that the reefs will now be thoroughly prospected.

At Cangai several men have lately started to work a reef which shows good gold, though as there is no crushing machine near, their progress must necessarily be slow until capitalists are induced to bring machinery on the ground.

Between Lionsville and Solferino, the prospectors claim on the Garibaldi reef is being worked by two men, who have been making good wages during the past year by sorting the stone as they extract it from the reef, and then carrying the richer portions for over a mile upon their backs to a crushing-machine worked by water power. A tunnel is also being put in by Mr. Bassetti to strike the same reef lower down the hill at No. 4 claim, and as this reef has been exceedingly rich the result of this tunnel will be watched with interest.

At Poverty Point a strong Company are constructing an expensive tunnel with the object of bringing water to sluice a large extent of rotten granite which is known to be payable. If the work be satisfactorily carried out, this should become a very important mine. I may state that some similar rotten granite from Wilson's Downfall in the same tract of country, sent for assay a short time since, yielded 7 ozs. 19 grs. of gold and 3 ozs. 8 dwts. of silver per ton.

Along the coast between the Richmond and Tweed Heads (to the east of the carboniferous basin) is another belt of older rocks (Siluro-Devonian) capped in places by basalt, which has evidently at one time covered a much larger area. The sand along the shore is auriferous—the gold occurring along with a black sand which becomes concentrated by the action of the waves, more especially after a heavy storm, and is then payable. The whole of the coast has been worked repeatedly in this way. The black sand and gold evidently come from a drift (underneath the basalt) derived from the underlying older rocks. These rocks abound in quartz reefs, in none of which, however, could I see gold. I have had samples of the best-looking of these reefs assayed, and the result shows traces only of gold and silver. Judging from this, and the fact that all the gold found on the beach is excessively fine (so fine that it is necessary to use copper plates to save it) I am of opinion that the drifts from which the gold has come are not likely to be worth working, and that it is merely the concentrating action of the waves that makes the beach deposits payable. I obtained fine colours of gold in a creek forming the head of the south arm of the Brunswick River, and was informed by prospectors that all the creeks running through this belt of Siluro-Devonian country are auriferous, but the deposits are apparently not sufficiently rich to pay for working.

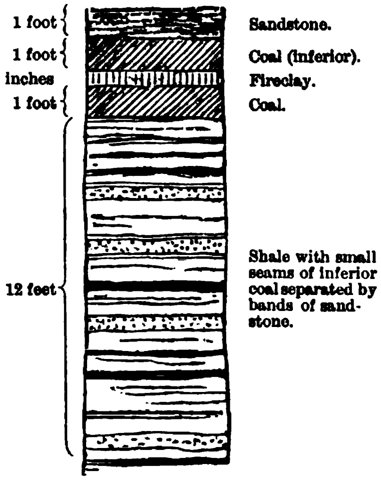
With regard to other metals, it is worthy of mention that near Gordon Brook there are a number of gossan lodes in slate country (near the boundary of the granite) which show strong indications of copper, one of them having been explored to a considerable depth, and about 60 tons of copper extracted and smelted.

In the serpentine country on the same run are large deposits of chrome iron ore; while at Pucka (Yugilbah Station) and on the South River range are fair lodes of antimony sulphide (stibnite). These deposits will be well worth further prospecting in the future; but until railways have been constructed the means of carriage are too imperfect to admit of their being worked at a profit.

One of the most remarkable features of the Richmond and Tweed district is the occurrence of large areas of basaltic country. From the decomposition of the basalt is derived the splendid chocolate soil which must eventually make the Richmond River one of the finest agricultural districts in Australia, and it is apparent that it is upon this, rather than upon its mineral resources, that its future prosperity will depend. One great difference between this district and that of the Clarence is, that while in the latter the soil is purely of alluvial origin, and therefore occurs only in the flats along the course of the river, on the Richmond, being derived from the decomposition of volcanic rocks *in situ*, it forms miles of ridges, and extends a considerable distance back from the river. This land is covered with an impenetrable scrub consisting of sub-tropical vegetation, the clearing of which costs about £10 per acre.

I will now give the details, from my notes, of the geological features observed upon the tour.

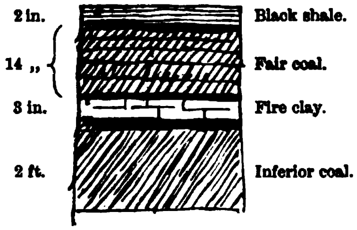
From Grafton to Nymboida the road lies over carboniferous sandstones and conglomerates. To the left of the road in Farquar's Creek coal shows in several sections, the best of which was as follows :—



Again, on the bank of the Nymboi, at Mr. Buchan's station, other sections are seen with a few inches of fair coal in the centre of a great thickness of carbonaceous shale. On the south side of the river, about 1 mile from the crossing, is a dyke of quartz porphyry containing good specimens of carnelian.

In the direction of Back Creek (Kangaroo Creek) south-east of Grafton, the carboniferous formation extends for about 40 miles, when the sandstone gives place to Upper Silurian rocks much altered and dipping 30° W. of S. at 77°, though this dip varied a good deal, the strike in places being nearly west. Several reefs, chiefly narrow ones, occur about here. One of them, just upon the junction of the two formations, had been sunk upon. It is called the "Little Nell," and I was told that 2 tons of the stone had yielded 14 ozs., but the reef had subsequently thinned out. Just below this spur auriferous deposits were found, and yielded fair wages for a distance of 8 miles up the creek. Along the range dividing the waters of the Nymboi from those of the Orara, the slate formation continues for about 1½ mile, when the range as it gets higher is capped with carboniferous sandstone, and this again, a few miles further south-east, is covered by a basalt flow which caps the range as far as the Bald Knob, 1,800 feet above Grafton.

At the head of Pulgenbar Creek (on the Gordon Brook Run) north of Smith's Flat, I took the following section of a coal seam :—



This seam dips south at about 2°. About 4 miles west from here is a belt of altered slate country between the carboniferous sandstone and the granite. This belt is about 1 mile wide, and contains numerous gossan lodes with indications of the occurrence of copper. About 2 miles further south is a wide gossan lode (15–25 feet) in granite. This lode runs across the creek (bearing 20° W. of N.), and contains iron and copper pyrites, native copper, and faint stains of green carbonate of copper. Close by here is the Jakoonbie Copper-mine—the property of Messrs. Thos. Fisher and G. A. Morell. A shaft has been sunk for a depth of 120 feet, and drives put in at 50 and 110 feet levels. 60 tons of (dressed) ore were smelted at the Eskbank Smelting Works—the highest yield being 14⅞ per cent. The lode is 4 feet wide, and bears 40° E. of N.

The coach road from North Arm (near the Clarence Heads) to Swan Bay on the Richmond runs through carboniferous country, consisting of fine flats (some of them good agricultural land) and low ridges well timbered. The flats are unfortunately subject to floods when the Richmond overflows its banks.

From Lismore to the Tweed the road is over basalt country for about 16 miles. Then occurs a dyke, about a mile wide, of older volcanic lava (pitchstone), which presents a glassy concretionary appearance, and is either red or black in colour. About 2 miles to the west of this point the lava is found to be full of beautifully coloured specimens of chalcedony, many of them being of very fantastic shapes. These are due to the fact that this lava country is full of springs, and the water carrying silica in solution deposits it, on reaching the surface, in the form of chalcedony of different tints.

Carboniferous sandstone succeeds the lava until we reach the Nightcap Mountain, where pitchstone (though of a different texture) again makes its appearance, and this is capped on the top of the mountain by a patch of dense blue basalt, clearly pointing to the greater age of the glassy lava.

Beyond the Nightcap Mountain (which attains an elevation of over 3,000 feet) highly altered cherty sandstones are met with until we near the Tweed, when a narrow belt of dark blue altered slates (with flexured quartz veins) makes its appearance, and this is followed by hornblendic granite, of which Mount Warning appears to be formed.

Beyond M'Farlane's we come to cherty sandstone, probably belonging to the carboniferous series. Within 4 miles of Cudgen basalt again makes its appearance, having now a fine columnar structure. The road from Cudgen to the Richmond is along the sea-shore. The formation is Siluro-Devonian, altered slates, and sandstones, with here and there a patch of basalt overlying them. The black sand containing gold, which is washed in layers on the beach, evidently comes from underneath this basalt.

About the Brunswick numerous reefs intersect the altered slates and sandstones of Siluro-Devonian age. None of these reefs however appear to be payably auriferous.

Between Cape St. Lennox and Ballina the base of the basalt is just on a level with the sea, and underneath can be seen (where the basalt has broken away in the cliffs) the surface of the altered slates. Between Ballina and Lismore the slate country is about 7 miles wide, and basalt again succeeds. Between Lismore and Casino the road is over basalt country, until within 5 miles of the latter place when the carboniferous sandstone is again met with, and this continues along the Upper Richmond and across between the Richmond and Clarence, only varied by patches of basalt which overlie it. Seams of coal outcrop in many of the creeks running into the Richmond. Some of the coal appeared to be of very fair quality, but none of those which I inspected were of sufficient thickness to enable them to be worked with profit.

I have, &c.,
EDWARD F. PITTMAN,
Geological Surveyor.

The Under Secretary for Mines.

APPENDIX 3.

Report by Edward F. Pittman, Esq., Geological Surveyor.

Sir, Department of Mines, Sydney, 7 August, 1880.

In accordance with your instructions I have inspected the reefs in the Dalmorton and Cunglebung districts, and have now the honor to make a progress report.

From Grafton the Mesozoic coal formation extends as far as Chambigne Creek, where it dips at a low angle off highly inclined beds of altered slates and sandstones, which are probably of Devonian or Upper Silurian age. From here the road rises rapidly for about 4 miles to the top of a range at the head of "O B X" Creek. The range is capped with a considerable thickness of coarse pebble conglomerate, which is evidently the lowest of the coal series. Chambigne Creek is auriferous, and several reefs have been opened in the neighbourhood. I have not inspected these yet, but hope to have an opportunity of doing so on my return.

From the range above mentioned the formation consists of altered slates and sandstones all the way to Dalmorton and Cunglebung. After crossing the Nymboi at Buccarumbi the country becomes very broken. The road follows the course of the Little River, on each side of which precipitous hills rise to a considerable height, occasionally as much as 1,800 feet. The dip of the beds varies from 20° E. of S. to 20 W. of S., at angles of between 60° and 70°. The slates and sandstones are fine-grained and siliceous, and are very similar in texture and appearance to the rocks at Copeland. In the Dalmorton district, however, the reefs appear to be more regular in direction than they are at the latter place, following as a rule the line of strike of the country, with a few unimportant exceptions in the shape of cross-courses, where quartz reefs have evidently filled crevices or joints in the rock, the directions of which are at right angles to the strike.

I visited no less than thirty-eight reefs in the neighbourhood of Dalmorton and Cunglebung, all of which have been worked to a greater or less extent. One of the most noticeable facts in connection with this gold-field is the quantity of unprofessional work which has been done. I am informed that the majority of the miners who opened the gold-field were inexperienced in such work, and were chiefly navvies and bushmen. The employment of such unskilled labour has resulted in the expenditure of a considerable amount of capital, with very little to show for it, and there is no doubt that this was to a great extent the reason why public confidence in this gold-field was shaken and the reefs deserted. At present there are no miners at Dalmorton. There is a fine crushing plant of ten stamp-heads lying idle. It belongs, I believe to the Hon. John Fraser, and is in very good order. There was another crushing machine some years ago on the Dinner Creek, near Cunglebung, but this has since been removed, which is very much to be regretted, as there are now no further means of testing the reefs in that neighbourhood, and some of them appear to me to be well worth working.

About Dalmorton and the neighbouring ranges I inspected the following reefs. The Perseverance Reef bears 15° S. of E., and is about 2 feet 6 inches wide at the bottom of the Prospectors shaft, where the stone contains a good deal of pyrites. Six shafts have been sunk on this line, the deepest being the Prospectors, about 65 feet. I was informed that 314 tons of this stone had been crushed, yielding 289 ounces of gold. About 100 yards north is Webb's line of reef, varing in width from a few inches to 2 feet. Six shafts have been put down on this reef, from which it is said 117 tons of stone yielded 104 ozs. of gold. A tunnel was subsequently put in by the Tower Hill Company, from the foot of the hill, for a distance of 500 feet along the reef, with the intention of opening communication with the shaft. Some hundreds of tons of the stone were crushed, but proved to be very poor. At the end of the tunnel the reef is thrown to the south by a fault, and the part of the reef which proved payable is some distance west of the fault, at the junction of another reef which is said to be (erroneously in my opinion) the Perseverance. I was informed that 1,630 tons of stone from this junction yielded 1,622 ozs. of gold, and that some of it gave as high as 5 ozs. per ton. There are several other reefs in this hill in proximity to those already mentioned, and similar in character. They have all been worked to a greater or less extent, and are said to have yielded from 15 dwts. to 1 oz. per ton. I am of opinion that some of them could be profitably worked, considering the advantages they command in the shape of a fine battery and good road for carting—the reefs being situated scarcely a mile from the machine.

On the opposite side of the Little River (eastwards) are the Golden Gate, Morning Star, Florence Irving, Charles Dickens, and Krohman's Reefs, varying in width from a few inches up to 3 feet. They have all been prospected, and are said to have yielded from 8 dwts. to 1 oz. per ton, but no amount of work has been done in any case. About 3 miles south-east of Dalmorton is the Hercules Robinson Reef bearing 20° S. of E., and dipping southwards. It varies from 10 inches to 2 feet in width. A trial crushing of 1½ ton is said to have yielded 1 oz. per ton. About 1½ mile S.-W. from this is the Union Reef, averaging about 18 inches in width, and bearing 10° N. of E. A shaft was sunk on it to a depth of 90 feet, and 90 tons extracted, which are said to have yielded 110 ozs. of gold.

The Lone Star is about ½ mile S.-W. from the last, and forms an exception to most of the reefs in this district, as its course is nearly north and south. It has an average width (so far as it has been opened) of 18 inches. From the shaft (35 feet deep) and cutting, 58 tons are said to have yielded 1 oz. per ton. The prospects of the reef in this neighbourhood were considered so good that the proprietors of the Union Reef started to build a dam and erect a crushing machine, but owing to bad management and reckless expenditure of capital, the works were never completed and the mine was closed.

Half a mile N.-W. is Mary's Home Reef. A shaft has been sunk to a depth of 30 feet, in which the reef shows 18 inches wide. None of the stone has been crushed.

About 8 miles from Dalmorton in the direction of Buccarumbi is the Homeward Bound Reef, varing from 1 to 3 feet in width. 100 tons of this stone are said to have yielded 15 dwts. per ton. Other reefs in the ranges surrounding Dalmorton are the Dawn of Hope, Australian Chief, Hibernian, Alice Benbolt, Scottish Chief, Pioneer, Chieftain, Victoria, Golden Spur, Maximilian, Liberator, William Tell, and Adam's Reef. They have all been prospected, and most of them have been found to contain gold in sufficient quantity to pay if carefully worked. I may state that the colour of gold is visible in the stone lying by the shafts in many of the reefs I inspected.

Towards Cunglebung, on Dinner Creek, the first reef I saw was the Abercrombie, bearing 30° S. of E., and averaging 18 to 20 inches in width. The stone is rich in gold, almost every piece of quartz in the heap showing colours. Mr. Poole, the Mining Registrar of Dalmorton, who accompanied me, crushed and washed 6 ozs. roughly, and obtained from it over 1 grain of gold. The sample was not a picked one, but taken at random off the heap, and the gold was not by any means coarse. If there were a crushing machine in the vicinity, there is no doubt that this reef would prove a good investment. There was a machine about 4 miles down the creek, but it has been removed and sold.

Smith's reef consists of an immense mass of stone over 6 feet wide, running east and west, and junctioning with another wide reef running north and south. Some hundreds of tons of this stone were crushed, and yielded 5 dwts. per ton, which did not pay expenses, as the crushing alone cost £1 per ton.

Other reefs in the district are the Christmas Box, St. Patrick, Golden Crown, and Cunglebung, bearing east and west, and varying from a few inches to 1½ foot wide. Shafts have been sunk on all of them, but no stone has been crushed. A patch of good alluvial was worked in the bank of the creek at the foot of the spur where the Cunglebung Reef crops out.

At Cunglebung Station the Wellington Creek junctions with Cunglebung Creek, and about 4 miles up the former we come on the commencement of an alluvial diggings which extends for about 2 miles further up the creek. Within this area the points of the creek have been worked for the last fourteen years, giving fair wages to a few men. There are at present fourteen miners on the ground. At the head of this patch of alluvial ground is the Switzerland Reef, a narrow vein from 4 to 6 inches wide, bearing 5° east of north, and dipping east. A tunnel was driven 40 feet on the reef some years ago. Some of the stone is said to have been rich, but no quantity of it was crushed.

In conclusion, I have the honor to state that among the numerous reefs in the Cunglebung and Dalmorton district, there are not a few which, I am of opinion, only require working to prove payable investments; and while Mr. Frazer's fine crushing plant remains at the latter place there are special facilities for a thorough prospecting of the district.

I have, &c.,

EDWARD F. PITTMAN, Assoc. R.S.M.,

Geological Surveyor.

Appendix 4.

Report by Lamont Young, Esq., F.G.S., Geological Surveyor.

Sir, Department of Mines, 3 April, 1880.

In accordance with your instructions, I have inspected the localities in which the discovery of antimony and silver ores was recently notified to the Department, and have the honor to furnish you with my report on the same, together with the results of some assays, and a map showing the position of the deposits.

The antimony deposits are situated on the Munga Creek, 4 miles above its junction with the Macleay River, and occur in rocks which, judged from their lithological character, are of Devonian age. In the neighbourhood of the mines the strata have been highly disturbed, causing the country to assume a broken character,—a point which, taken in connection with the variation exhibited in the strike of the lodes and the frequent appearance of "slickensides," may be considered as favourable to the presence of mineral deposits of an irregular nature. Up to the present no workings of any extent have been prosecuted in the locality, but what little has been done tends to confirm this opinion.

The antimony ore occurs in irregular bunches, occasionally of a considerable size, enclosed in a quartz matrix, which forms the chief constituent of the lodes. These latter have a general strike between north and north-east, one notable exception being the Victoria Reef; they are much inclined to break into strings or leaders, and to vary in size. The antimony minerals are represented by "stibnite," or sulphide of antimony, and "cervantite," or oxide of antimony; the latter will, I believe, be found replaced by the sulphide when lower portions of the lodes are opened out; at present it will serve, by a judicious combination with the sulphide, charcoal, and a flux, to produce metallic antimony without the use of scrap iron. The stibnite appears of a high degree of purity, and the cleavage faces of crystals, seen on breaking up masses of the ore, are remarkably brilliant and large. The following is the result of an analysis by Mr. Dixon of a specimen of mixed sulphide and oxide for gold and silver :—Gold, 2 dwts. 10 grs.; silver, traces per ton. A fine-grained variety is occasionally found.

By the enterprise of Messrs. Herrensmidt and Ward a smelting furnace has been erected on the spot, and the former gentleman has practically demonstrated the value of the minerals of the locality for the production of the finest antimony. These gentlemen, who have some lodes in the immediate proximity to their works, have let the same on tribute to working miners, a proceeding which has been followed by other claim-holders. From the nature of the deposits and the value of the minerals they contain, it is apparent that a large extent of lode must be available in order to insure a constant supply of ore. This can only be done by the acquisition of a considerable area of ground, or the amalgamation of several small claims. The subsequent mining operations must be at first principally exploratory, and will necessitate the expenditure of capital. It will thus be seen that these deposits can only be worked by those who have money to spend and leisure to wait for returns, and even these should carefully consider the demand for antimony in the market and the sources of supply before investing. It is my opinion that considerable but very irregular deposits of antimony will be found in this district. The following is a brief summary of the principal claims on which work has been begun :—

Messrs. Herrensmidt and Ward's claim, shaft No. 23, shaft down 28 feet; tributers stoping away the lode, which is 25 inches wide, has a strike bearing N. 10° W., and dips to the west at an angle of 76° with the horizontal. The lode shows patches of ore composed of mixed stibnite and cervantite with a quartz matrix.

Shaft No. 1 (20 yards to the north of No. 3, and out of repair); shaft said to be 75 feet deep, and to have passed through two reefs.

Shaft No. 2 (to the north-east of No. 1). Shaft down 15 feet; tributers stoping away the lode, which has split into leaders, and shows 6 inches wide in the northern end, without mineral, while at the southern end there is a vein of mixed stibnite and cervantite 4 inches wide. The lode has a strike bearing N. 10° E., and is perpendicular. There is an open cut above shaft No. 2; at the time of my visit it was filled with water, to tap off which a level was being driven into the hill. I was informed a good deal of mineral had been taken out of the cut, which is in a line with the reef in shaft No. 1. On this claim there appear to be at least two lodes. The rocks of the locality are fine sandstones. A comfortable hut has been put up, also an assay shop, and the smelting furnace, flue, and stack before mentioned.

Bolt's Reef, Victoria Claim.—At the time of my visit the proprietors were repairing their shaft, which I was informed was 50 feet deep. The lode is 30 inches wide, has a strike bearing N. 72° E., and is nearly perpendicular. It was composed of mixed stibnite and cervantite, and 10 tons had been sold to Mr. Herrensmidt.

Thomas's claim, about 70 yards south of the Victoria. The outcrop of a lode had been opened on; it had a strike bearing N. 58° E., with a dip of 75° to the north. The lode was composed of quartz strings, with occasional patches of stibnite and cervantite, having a total width of 49 inches. Some distance further to the south the same party had a shaft 27 feet deep on a lode bearing north and south, and dipping to the west; some ore had been extracted and was being dressed for sale, but no work was being done underground, and the tributers informed me the lode had become poor.

Walford's claim (about 300 yards to the north of the Victoria claim). The outcrop of a lode had been just opened on, bearing north and south, and dipping to the west at an angle of 55°. The lode was about 10 inches wide. Some stibnite had been extracted, and the proprietors were engaged in driving a level into the side of the hill, to cut the lode at some depth from the surface.

William Carrol's claim (the Young Australian). On this claim there appear to be three lodes the outcrops of which have been opened on; they all have the same character, being composed of small quartz veins, with occasional bunches of ore, consisting of mixed stibnite and cervantite. Between the quartz veins of the lodes layers of a black slaty-looking mineral are often to be seen. The direction and dip of the lodes is as follows:—No. 1, strike N. and S., dipping 76° to west; No. 2, strike N. 12° E., dipping 72° to west; No. 3, strike N. 30° E., dipping 70° to west. None of the lodes are well defined as regards their width at present; they are situated just south of Messrs. Herrensmidt's, and like them, enclosed in sandstones.

The Lady Mary.—This claim is on the west of Munga Creek. Two shafts, 26 and 20 feet respectively, have been sunk on the lode, which has a width of 13 inches. The strike of the lode is N. 45° E., and it dips to the north-west at an angle of 80°. The adjoining rock is a sandstone, and shows numerous faces. The lode is composed of quartz, with patches of stibnite and cervantite.

The Star of Hope—situated to the west of the last-named claim. One shaft sunk 22 feet deep, cutting a small reef 4 inches wide. This reef has also been exposed in a trench, about 100 yards to north-east of the shaft. The reef dips to the north-west, and nothing very encouraging has yet been met with in the shape of ore.

De la Force's claim. The lode has been opened on at the surface by an open cut, and a shaft 15 feet deep has been sunk on it. The width of the lode is not very well defined, but it has already furnished a considerable quantity of ore, the blocks sometimes being very large. The strike of the lode is N. 30° E., with a dip to the west of 65°. The ore occurs in a kind of soft clay, known to miners as "fluccan." The neighbouring rocks are sandstones.

Kavanagh's claim—situated to the north of the last-named. The outcrop of a lode has been opened on, but no work worthy of remark done. Near this claim Messrs. Wigley and party have found some pieces of stibnite while prospecting, but no other lode has yet been found.

I have to express my thanks to Mr. Barrie, of Kempsey, who guided me out to these mines, and also to those resident on the spot, who put me up for the night and showed me from claim to claim when making my inspection.

The silver-bearing lodes occur in the parishes of Yarrahapinni and Warrell, counties of Dudley and Raleigh, and are scattered over a considerable tract of country. The geological formations of the locality consist of Devonian shales, intersected by a broad belt of granite. Here, as at Munga Creek, I was unable to find any fossils, though I have little doubt a systematic search would be rewarded with success. The strata have been much disturbed and altered where they border on the granite, and it is difficult in these localities to make out their bedding; it is however very well shown on the north side of Grassy Head, and again a little to the south of the Pilot Station. The strata in the first-named spot are nearly horizontal, though they have a decided dip to the north-east, with a strike bearing N. 35° W; very much the same appearances occurring near the Pilot Station. The granite is a white, coarse-grained granite, with occasional patches of a finer texture.

The lodes are found in both the granite and shales, but chiefly the latter; many of them present a favourable appearance, being composed of several minerals, and having much of the vesicular or porous character that is considered an encouraging indication by lode-miners. Quartz and arsenical pyrites predominate in their composition, while zinc-blende, iron pyrites, and galena also occur.

The following are the assays by Mr. Dixon, F.I.C., F.C.S., of the samples I collected on the spot. I may mention that the average samples were taken from a considerable amount of stone.

No. 1. An average sample from the Seven Oaks Reef; Messrs. O'Rourke and party. Per ton: silver—2 ozs. 18 dwts. 19 grs.; gold, traces.

No. 2. A sample containing picked specimens of the zinc-blende, mixed with quartz and arsenical pyrites, from the Seven Oaks Reef. Silver, 2 ozs. 15 dwts. 12 grs.; gold, traces.

No. 3. A sample containing picked specimens of arsenical pyrites mixed with quartz, from the Seven Oaks Reef. Silver, 8 ozs. 9 dwts. 20 grs.; gold, 10 grs.

No. 4. Average sample from the Edith Reef; Messrs. Barber and party. Silver, 18 dwts. 10 grs.; gold, traces.

No. 5. A sample containing picked specimens of arsenical pyrites mixed with quartz and iron pyrites, from the Edith Reef. Silver, 13 dwts. 1 gr.; gold, traces.

No. 6. An average sample from the Charcoal Reef; Messrs. Rudder. Silver, 17 ozs. 12 dwts. 6 grs.; gold, traces.

From these assays it will be seen that the stone at present being raised is not very rich in silver. It must also be added that the mixed mineral composition of the lodes is such as would not easily lend itself to the extraction therefrom of all the silver shown in the assays. I am however of opinion that a more definite character will be exhibited by the deposits at a greater depth from the surface, and that they are well worthy of being further prospected.

The annexed is a brief summary of the principal claims on which work has been begun:—

The Edith Reef.—A little stone has been removed from the top of this reef, which has a strike bearing N. 12° W., and dips to the west. It is about 7 inches wide, being composed of leaders, and is principally quartz and arsenical pyrites, with a little zinc-blende and iron pyrites.

The Seven Oaks Reef.—One shaft sunk on the reef, which is also exposed in the side of the hill. The strike is N. 26° W., the dip westward, the width of the reef 12 inches, and its composition principally quartz and arsenical pyrites, together with zinc-blende like the last-mentioned claim; the neighbouring rocks are shales, but between the two lies the granite belt before referred to.

The Rose Reef.—Two small shafts have been sunk on this claim; the reef appears 22 inches wide, has a strike due north and south, and dips to the west. Granite occurs within 100 yards to the east. The composition is chiefly quartz and arsenical pyrites.

The Charcoal Creek Reef.—This reef has only just been opened on; it has a strike N. 25° E., and appears vertical. It is composed of rotten quartz and arsenical pyrites, and shows small specks of galena. The width of the reef is 12 inches. The rocks of the neighbourhood are shales.

In conclusion, I would beg to express my thanks to Messrs. Barrie, Sullivan, and Bilby, who showed me the road out from Kempsey and subsequently guided me to the different claims; and also to Captain Jamieson, the Pilot of the Macleay River, who put me up during my stay in the locality.

I have, &c.,
LAMONT YOUNG, Assoc. R.S. Mines,
Geological Surveyor.

The Under Secretary for Mines.

Appendix 5.

Report on the Kiandra Gold-field, and a Water Supply for the same; by Lamont Young, Esq., F.G.S., Geological Surveyor.

Sir,
Department of Mines, 25 May, 1880.

In accordance with your instructions I have visited the Kiandra gold-field, with a view to ascertaining the desirability and feasibility of a water-supply for mining purposes; and have the honor to submit the following report on the same.

Kiandra is situated on the table-land of Maneero, 5,000 feet above sea-level, and close to the highest mountains in the Colony: within a radius of 16 miles may be seen the sources of the Snowy River, the Murrumbidgee, the Tumut, a large tributary of the latter, joining it 175 miles from its source, and flowing for the first 35 miles in a diametrically opposite direction; and finally some minor tributaries of the Murray or Hume River. Under these conditions it may appear at first sight strange that alluvial deposits of any extent should exist in the neighbourhood of Kiandra,—deposits so extensive as to promise many years of employment, and lying so high up in the surrounding hills that the supply of water requisite to work them has but a small gathering ground; indeed, were it not for some natural features hereafter to be enumerated, any attempts to institute hydraulic mining on a large scale would be hopeless.

With the aid of a compensated aneroid I ascertained that a fair amount of water, enough to supply twenty sluice-heads continuously, could be obtained from the left-hand branch of the Tumut River; two gaps, however, were unfortunately found to occur between the source of the water and the first diggings at which it would be available. These gaps, known as the Snow Vale and Russell's Corner respectively, are too deep to be bridged over with fluming, and the only way by which the water could be taken across them would be by inverted syphons. The length of the race up to the Nine-mile diggings, the first place where the water would be used, would be about 25 miles, and an additional 12 miles would be required to take water on to the New Chum Hill and Township Hill deposits. Mr. Lett, J.P., to whose kindness as a guide and in other matters I am much indebted, informed me that £100 a mile would in his opinion amply cover the cost of constructing this race; and as this gentleman has himself cut quite 20 miles of races in the neighbourhood, his estimate may be taken as a fair one. Mr. Sullivan, L.S., mining surveyor, is at present engaged in taking some levels in order to check my aneroid observations, and the result of his surveys will decide whether water can be brought from the Tumut River to work the extensive deposits at Nine-mile, Four-mile, New Chum Hill, and Township Hill diggings. I am convinced that the above river is the only source of a water-supply; for though sites for dams exist in the neighbourhood of the diggings, the amount of water they could contain would be quite trifling compared with the demand. I may, however, mention that for one or two claims the present supply might be supplemented: thus, a fair-sized dam could be made on the site of the Three-mile diggings, which is practically worked-out, and this water used for the claims on New Chum Hill. There is also a good site for a dam just behind Mount Tabletop, from which the water could be brought on to the Empress claim. Near the end of this report, I have appended a short notice of each locality where digging is carried on. I will now proceed to a general description of the country.

In the neighbourhood of Kiandra the country spreads out into large fan-shaped flats, which drain through narrow outlets. This appearance is very strikingly developed, and sometimes on a large scale, as in the extensive flat above the junction of Bullock Head Creek with the Eucumbene River; here the Eucumbene drains through a deep narrow gap, the damming of which would convert the flat above into a large lake. These flats at their upper extremities appear but little inclined towards the outlet, and are filled with a peaty kind of soil, in places becoming soft bogs and quagmires; over the whole grows a luxuriance of heaths, ferns, and mosses. Just near the outlet a sudden and rapid fall of the surface takes place, a small stream of water appears, and after draining through a little gorge is again lost in a larger flat beyond, into which several small flats drain. When once a stream of water of any size is formed, it is seen to flow through deep narrow gullies and over a bed of pebbles. As an examination of these appearances will explain some points connected with the auriferous deposits of the neighbourhood, I will describe them more in detail.

These fan-shaped flats are the gathering grounds of the snow, which falls in great quantities during the winter months; in them—thus protected during the cold season, and nourished during the spring and autumn months by fogs—ferns, mosses, and heaths grow luxuriantly. These, in the course of time, form spongy peats, which are the reservoirs of the melted snow-waters, and from which a clear, steady stream drains all through the summer, the slight brown tint of which clearly indicates the peaty nature of the ground at its source. The semi-solid state of the surface soil in the high flats is owing to its being largely composed of a porous mass of decaying vegetable matter, held together by the stems and fibres of the plants that form it; near the outlet, where the drainage becomes confined, the flow of water naturally increases in rapidity, and all soft decaying vegetable matter and soil is carried away by the stream, hence the sudden fall at the outlet of the flats where the peat-bog abruptly ends. When once a body of water is formed, so constant is its bulk during the summer, and so considerable during the spring, that a deep narrow gully is soon cut and maintained. The small size of the pebbles that lie in the beds of the streams cannot owe their appearance to the cause that usually produces it, namely grinding against each other, since these streams, though rapid, are not considerable enough to carry along the pebbles. The explanation in my opinion is as follows:—The pebbles are of granite and slate, such being the formations of the surrounding country, the highest points, as a rule, being slate. During the intense cold that these rocks are exposed to for the greater part of the year, they must, where unprotected by vegetation, be greatly affected by the frost, and not merely be broken off in blocks, but these latter themselves shattered and seamed with incipient fractures; when, therefore, the debris is carried by the melting snows or by thunderstorms to lower levels, the whole readily fall in small fragments. Where any very water-worn pebbles are met with, it may be confidently affirmed that they have come out of the auriferous deposits of the district or neighbouring conglomerates. Quartz reefs occur in both the granite and slate formations, and in two or three cases have yielded considerable amounts of gold; but the numerous discoveries of gold during the time they were being worked, and the inclement winter of the locality, caused them to be abandoned as soon as the rich surface patches were worked out; fragments of these quartz reefs are often to be seen in the beds of the present streams.

The locality of these diggings, as it has been exposed to intense cold, has also been the scene of the outbreak of subterraneous fire. Rising into a lofty peak in Mount Tabletop, covering a great extent of country, and wherever exposed the auriferous alluvial, occurs a great deposit of basalt, marking in Nature's most permanent outlines the course of an ancient lava flow. Whether Mount Tabletop was one of the spots where the lava burst out, or the only one, has not yet been definitely settled. From its elevated position above the rest of the basalt—from the hollow in the top of the mountain—from the peculiar appearance, like solidified streams of basalt, shown in the steep sides on the north and north-east—and from finding a piece of volcanic breccia on the summit—I am of opinion that the mountain marks the spot whence came most of the basalt on the east side of the Tumut River. When this outbreak filled the valleys and flats of the surrounding country, the adjacent hills must have been of a much greater altitude, since they are now, with few exceptions, below the level of the basalt, which therefore forms an elevated ridge, occasionally spreading into small table-lands. Buried beneath this hard covering lie the auriferous gravels, and it is only where recent streams have cut narrow passages through it, or the surrounding country has been denuded away from the sides of the flow, that the alluvial deposits have been exposed. This latter process has occasionally occurred on so large a scale that the basalt has been as it were undercut, the alluvial below it being washed out, and great falls of basalt, often columnar, have taken place. This is especially well seen where the Eucumbene River skirts the basalt formation, some 3 miles below Kiandra. It has thus been, owing to the denudation of the neighbouring formations and the subsequent denudation of the fringe of the basalt formation, that the underlying gold drift has been washed out and down the sides of the present hills, and it has in nearly every case been in tracing up some such little lead of gold that the diggers have been led to the discovery of the main deposit. Up to the present this main deposit has been but slightly worked, that is in comparison to its extent, and a notable feature that has been exposed is the presence of a deposit of clay, more or less carbonaceous, and at times so highly so as to be almost a peat. This deposit lies over the gold drift, and like the latter, always has a slight dip into the hill, increasing in thickness as it gets further in. Two or three fine sections are shown in the claims. The carbonaceous clay, as also the clay seams above and below it, contain plant remains more or less perfectly preserved, and during my stay in the locality I dissected out some 200 specimens of leaves; the majority from their form and venation appear to be allied to the genus *Eucalyptus*, but as yet the specimens have not been worked out. Some of the wood preserved in the clay above the leaf-beds is remarkably fresh-looking, as in specimen No. 1. In the sand deposit that intervenes between the leaf-bed and the coarser auriferous drift, as also in the latter, false bedding is often to be seen. In the drift itself an enormous quantity of very rounded pebbles occur, and I think there is little doubt that they are the remains of conglomerates, similar to those at Lob's Hole, and which during the Post-Pliocene period, were broken up and washed, together with the auriferous reefs of the neighbouring slates, into the channels in which they are now found. Much of the auriferous quartz was full of iron pyrites, as shown by specimens found in the leads, and this is doubtless the cause of the cement bands and iron infiltration markings in the finer drift. The bed rock on which the deposits rest is a Silurian slate seamed with quartz veins and iron infiltration markings. In one place, the Four-mile diggings, the drift rests on granite. In the neighbourhood of Kiandra there are several kinds of granite, some highly hornblendic with pink felspar; another near the head of the Tumut River with no hornblende but white felspar, the quartz predominating, and of a gneissoid structure; while a third variety, on which the township is built, contains a quantity of zircon and iron pyrites.

From an examination of the sections in the different claims, and the characteristic appearances I have described, it would appear that after the auriferous alluvial, composed of the debris of slates, conglomerates, and gold-bearing quartz reefs, had been spread out in the ancient water channels, a quantity of fine sediments were deposited thereon, and subsequently on these latter a growth of ferns, mosses, and small shrubs, similar to the deposits now forming, lived and died, thus giving rise to the carbonaceous clays and earthy lignites, to which I have given the name of leaf-beds. These in their turn were covered by deposits of clay and sand, and finally over the whole flowed and solidified a stream of lava. The time which must have elapsed between the deposition of the auriferous gravels and the present, when the then adjacent mountains have become valleys, and the old river bed, protected by its basalt capping, left high up in the sides of the present hills, may appear, to persons unaccustomed to reckon by geological time, very great; and yet considerable as it may be, some of the wood in the leaf-beds retains its natural colour, and thousands of the leaves still exhibit every vein that meshed their surface. To the geologist this is a most interesting locality, and I have little doubt that if the area of the basalt formation were mapped out, some valuable information as to the position of the auriferous deposits would become apparent, that is to say, the direction and extent of the old river bed be more or less clearly indicated. From the widely separated localities in which the deposits have been found, there is evidently an immense area available, the only payable method of working which, at present known, is by hydraulic mining.

The following are the chief localities in which gold-mining has been carried on:—

The Nine-mile diggings.

The shallow ground in this locality has long since been worked out. At the present time it is being reworked by eight parties, who are only able to work during three months of the year, owing chiefly to the want of water. This year (1880) none of them had enough water to wash up. These diggings were very rich, and remarkable from the presence of large blocks of a quartz breccia, containing subangular fragments. The cementing material is silica.

There is one large sluicing claim called the Empress. The wash is composed of quartz pebbles in various stages of attrition, sandstone pebbles highly waterworn, and large masses of jasperoid quartz, evidently derived from a neighbouring reef that has been intersected by the tailrace of the claim. The following is a section of the deposits exposed in the open cut:—

	Feet.
Surface soil, gravel, and sand, in places thicker, and containing blocks of basalt, derived from the ridge at the back	18
Clay	3
Clay containing stems of small trees	3½
Carbonaceous clay, containing leaves, &c.	4½
Clay	2½
"Wash" impregnated with oxide of iron	18
Clay	3½
Wash	30
Total thickness of deposit at the present time	83

The bed-rock is a Silurian slate, yellow in colour, and much decomposed. The stems of small trees contained in the second layer of clay are all more or less flattened and in various stages of decomposition, at times the wood being almost its natural colour, while occasionally specimens occur converted into lignite, and exhibiting a fracture like charcoal. Many of the wood specimens show joints (see No. 2). The most abundant leaf found in the carbonaceous clay is apparently a variety of the *Pteris esculenta*, which now grows abundantly in the locality. Similar leaves were found in the Pliocene leads on the Gulgong gold-field. In places this leaf seems to form the bulk of the organic matter which is irregularly distributed through the 4½-foot clay band. Fresh fractures in the carbonaceous clay were decidedly conchoidal, reminding the observer of kerosene shale, but when exposed to the weather it soon splits up into flakes like ordinary shales, and whitened considerably.

Beyond a doubt the shallow diggings in this locality have been due to some of the thick deposit being washed out of the hill sides, while the scarcity of water is the cause of there being only one claim in the deep ground. Here, as in the other localities where the old lead is worked, the party who first get the water have practically possession of all the ground. The yield of the Empress claim, Mr. Lett informs me, is £10 a man per week.

New-Chum Hill diggings.

The Emperor claim consists of a large open cut, and a tunnel 1,200 feet long, which was driven into the hill with a view of striking the deep ground, in which, however, it has not succeeded. Comparatively little wash has been removed from the workings; the yield was from 1½ to 3½ dwts. to the ton after crushing the wash in a battery. The latter was being removed at the time of my visit, and the claim had not been worked for some time.

The Homeward Bound.—This is a large open cut, and has been worked continuously for nineteen years. Sluicing operations can, however, only be carried on for from ten to twelve weeks in the year; yield £6 to £10 a man per week.

The Scotchman's Tunnel.—On this claim the present tunnel is 700 feet long; one driven at a higher level was 1,200 feet long; it, however, struck the wash so high up that it has since been abandoned. The claim has been worked continuously for nineteen years. The bottom of the wash only is removed, and is treated in the valley below the claim. An iron pyrites cement occurs in places at the bottom of the wash, and sticking in the lower side of the cement are highly water-worn grains of gold. (See specimen No. 3.) Trunks of small trees converted into lignite are also met with.

The drift of New Chum Hill is composed of quartz pebbles of various degrees of roundness, also very waterworn sandstone pebbles, sand, clay, and included fragments of the slate bed-rock. The succession and nature of the deposits vary somewhat from that seen in the Empress claim. The following is the section shown in the Emperor claim.

	Feet:
Basalt...	1½
Clay	8
Carbonaceous clay, leaves, fern stems, &c.	8
Pipeclay	8
Sand	4
Clay (very fine, like fire-clay)	1½
Clay	5
Carbonaceous clay...	35
Clay (very white and fine)	15
Washdirt	30
Total thickness of deposits...	116

Bullock Head Creek.

This creek flows between New Chum Hill and Township Hill, and was found to be very rich from below the Emperor claim to its junction with the Eucumbene River; it is now supposed to be worked out.

The Eucumbene River.

This stream flows past the eastern extremity of New Chum Hill; it has been worked for 4 miles above its junction with Bullock Head Creek, but it was richest at and below New Chum Hill. The river has also been worked in places for 5 miles below the town of Kiandra, that is 6 miles below the junction just mentioned. The river here passes through a narrow gorge filled with huge boulders, and locally known as the Rocky Cañon; lower down the river payable gold has also been found. At the time of my visit, in one claim 3 miles from the township, four men were working the bed of the river, having diverted the water, and during one week realized 25 ozs. The bed rock at this claim was a very highly hornblendic granite. (See specimen No. 4.)

The river slopes just below the township of Kiandra contain the following rich patches of shallow alluvial and reefs:—The Whipstick Flat.—This was a very rich spot, much of the gold was evidently derived from a reef at the head of a flat, and which was itself worked. Just below the reef a 28-lbs. nugget of gold with a few fragments of quartz sticking in it was found. The Surface Hill.—Another very rich patch traversed by a large quartz reef. From the adjoining gully (Pollock's Gully) a great quantity of gold was extracted and numerous zircons found in the wash; these appear to be derived from a hornblendic granite that crops out at the township. Portion of Surface Hill is of slate formation.

The Whipstick Reef.—This reef was worked down for 14 feet from the surface, when the yield falling off, it was abandoned; the surface stone went 3 ozs. 3 dwts. to the ton, and the last crushing went only 18 dwts. The reef is in slate, and the old working having fallen in, I am unable to indicate its strike and dip; it appears however to form a half-circle at the spot where it was worked, and is, I believe, a leader to the large reef on Surface Hill, which has a strike north 5° west, is from 3 to 8 feet wide, and dips to the west at an angle of 79° with the horizontal. The Charcoal Reef is situated near the Eucumbene River, on the opposite bank. A shaft was sunk 60 feet deep, and the yield is reported to have been 4 ozs. to the ton. The reef was in slate and 9 inches wide; this last fact, coupled with the quantity of water contained in the adjoining rocks, caused it to be abandoned.

The Three-mile diggings.

The gold in this spot was derived from a large reef and leaders known as the Three-mile Reef. At the present time one party of Chinese and one European are fossicking in the old ground. Large pieces of specular iron ore and psilomelane occur in the drift. (See specimens No. 5 and No. 6.)

The Three-mile Reef is in slate; its strike south 20° west dipping to the north-west, but very slightly, being almost perpendicular; it has a width of from 2 to 3 feet. 500 tons were crushed, and yielded an oz. to the ton. The reef was sunk on for 40 feet and then stoped away from the surface. It has not been worked for ten months, on account of the shaft and workings being flooded—the surrounding rocks contain a great deal of water. A tunnel was put in 800 feet to tap off the water, but was abandoned on account of the hard nature of the rock met with. It was estimated that 300 feet more would intersect the reef at a depth of 150 feet from the surface. A very rich leader was found adjoining this reef, and subsequently lost. Four men extracted £1,500 worth of gold from it in four weeks.

Township Hill diggings.

Both in this hill, which is opposite to New Chum Hill, and in New Chum Hill itself, numerous shafts were sunk through the basalt capping which overlies the wash; in every case, however, the quantity of water met with prevented the shafts being bottomed. One shaft, just above the town, was sunk through 12 feet of basalt and 38 feet into the alluvial, when it had to be abandoned. Opposite the Emperor claim, the carbonaceous clay band is exposed in the hill-side. Here a Company began a tunnel, with a view to striking the lowest portion of the deposit, which at this spot dips rapidly into the hill. The site chosen for the tunnel was rather low, and after driving 500 feet some very hard rock was met with and the venture thereupon abandoned.

Four-mile diggings.

These diggings are situated between Kiandra and the Nine-mile, on the edge of the basalt formation. A long gully that drains from the spot into the Eucumbene River furnished a considerable amount of gold, which was evidently derived from the deposit under the basalt. The shallow workings are now abandoned, and one party only are now working the deep ground, the only peculiarity of which is that it rests partly on granite.

Eight-mile diggings.

Only one claim is being worked here; the ground has been opened in two places. The deposit was discovered by a small lead being traced up the hillside. The carbonaceous clay and clay bands occur as at the Nine-mile and other places. Comparatively little work has been done on the spot, and as yet the thickness of the washdirt is only 8 feet; the greater portion of this is more or less cemented by oxide of iron. The bed-rock is a silurian slate, highly contorted, seamed with quartz and iron veins, and occasionally very micaceous. Old tree trunks with roots attached, and standing upright in the recent alluvial deposits, have been found. The approximate yield of this claim, which can only be worked during a few weeks in the year, is from £4 to £7 per man a week.

Fifteen-mile diggings.

Situated on the left bank of the Tumut River, and in all respects a similar deposit to the last, the only peculiarity being the occurrence of granite pebbles in the wash. It may be mentioned also that some of the basalt of the locality has a semi-columnar structure. There is only one claim, but in the Tumut River, some 2 miles distant, a party of Chinese are working the river banks, which in former days yielded enormous quantities of gold. The rocks of the neighbourhood are slates, and occasional small veins of yellow copper ore are found in them, similar to those at Lob's Hole, but of less size.

In conclusion, I beg to state my conviction that very extensive and payable deposits of auriferous alluvial occur in the neighbourhood of Kiandra, and there is every indication that, should the gutter of the old river-bed be struck at any of the localities I have mentioned, it would prove exceedingly rich.

I have, &c.,
LAMONT YOUNG,
Geological Surveyor

The Under Secretary for Mines.

APPENDIX 6.

Report by Lamont Young, Esq., F.G.S., Geological Surveyor.

Sir, Department of Mines, 12 August, 1880.

In accordance with your instructions contained in the memorandum of the 12th of June, I have inspected the country included between Cobar and Parkes, and beg to hand you my report on the same.

Having proceeded to Wellington by train, I rode across the country to Parkes, arriving at that place on the 24th June. The following day I started for Burra Burra Station *via* the Bogan Gate. For the first 54 miles, the formation of the country as seen in the rises consisted of Devonian sandstones, occasionally white, but as a rule of a red or purple colour, and at times containing rounded quartz pebbles in considerable quantity. On the lower ground, these sandstones are overlaid by wide belts and patches of Tertiary alluvial, composed of a red sandy soil, in which are scattered quartz pebbles and grains of brown iron ore. This alluvial is evidently derived from the sandstones, and the brown iron ore is of recent formation and owes its origin to the same source. In three places we crossed dykes of greenstone, the neighbourhood of which might be profitably prospected, as it is this rock which at Parkes has furnished the most of the gold. In appearance the remains of these sandstones, but for their difference in colour, dark red instead of white, greatly resemble outliers of the Hawkesbury sandstones to be seen in the county of Camden. Near my camp, No. 6, about 50 miles from Parkes, we found a deposit of marl containing lumps of limestone, which I have no doubt would make very good lime. The prevailing vegetation thus far consisted of pine on the higher ground, and yarran and boree forest on the flats.

54 miles from Parkes, the road crosses a granite range, 300 feet above the surrounding country. This range is very narrow, but appears to extend for some distance on each side of the road; that it contains quartz reefs is certain, and one specimen of quartz I picked up had a very promising appearance; subsequently I was told that gold had been found in the neighbourhood. The granite formation continued for 12 miles along our road, being intersected by occasional broad belts of altered rocks and alluvial flats, and just at the last overlaid by a patch of Devonian sandstone, after which a micaceous slate formation appears, and extends for a considerable distance to the N.E. and S.W. From Burra Burra, I visited the locality, as shown on my map, where tin ore was said to have been found six years ago; but my search was unsuccessful: a considerable quantity of quartz debris and brown iron ore were the only minerals found in the small water channels.

I consider however that tin ore does very likely occur in this part of the country, since it is near the junction of granite and slate formations that that mineral is found, in the great tin-mining country of Cornwall.

From Burra Burra to Melrose, the road crosses another track of Devonian sandstone some 9 miles wide, traversed in the centre by a range running approximately N. and S. At the foot of this range is another deposit of marl similar in all respects to the one at camp No. 6. The strike of these sandstones as seen near the spot where they lie unconformably on the micaceous slate formation is N. 30° E., dipping to the north-west at an angle of 18° with the horizontal. The usual quantity of brown iron ore was to be seen scattered over the surface of the ground, while about 10 miles from Melrose Station there is a very large outcrop of brown and red hæmatite identical in appearance with the deposit at the Fitzroy iron mines: at first I hoped the iron ore might be the top of a copper deposit, but was unable to find any other minerals or the usual surface indications of copper. 5 miles beyond this spot we entered on slate country largely traversed by quartz reefs, and resting at Melrose Station against granite.

Round Melrose there are several ranges and isolated hills, and I consider the locality one very likely to contain minerals; indeed, on making inquiries, I was informed that gold had been found, but that want of water was the chief reason of the place being abandoned. I may here mention that, with the exception of Gilgai holes, in which the water dries up early in the summer, and a few small springs, secured by the run lessees under the improvement clause, there is no natural water storage to be found in this country nearer than the Lachlan or Bogan Rivers. The squatters have therefore had to make tanks or dams on every block of country they have stocked, and such water being private property, cannot be used by the prospector without special permission. The explanation of this want of water is that, with the exception of a few ranges and isolated hills, the whole of this back country is covered more or less deeply with a sandy alluvial soil; the rain that falls is therefore soaked up before it has time to accumulate in any quantity, and thus cut large channels down to the bed rock, in which waterholes would form. It is the opinion of some people that stocking the country will harden the surface of the ground, in which case water channels would form.

From Melrose the road to Eurimeran, a distance of 38 miles, passes through granite country, with occasional patches of porphyry; and it may, for the reason I have mentioned in connection with Burra Burra, be regarded as a circumstance very favourable for the occurrence of metalliferous deposits that so considerable a body of altered and igneous rocks should intersect the sedimentary formations of which this district is chiefly composed. The granite formation extends for 13 miles beyond Eurimeran, when it is replaced by a belt about 1½ mile wide, of slate, containing numerous quartz reefs. These slates pass under Devonian sandstones, which continue to the south as far as Mount Hope, in which locality there are numerous hills of porphyry—in some cases composed distinctly of altered stratified rocks, and in others partaking of a more massive and igneous character.

I was informed that in the neighbourhood of Eurimeran both tin ore and gold had been found in small quantities, and I consider it extremely likely that the information is correct. Some 2 miles beyond where the Devonian formation is first entered on, after leaving Eurimeran, the road crosses a small water channel filled with sand, and beside which a well has been sunk to a depth of some 60 feet. Amongst the stone extracted were pieces of shaly sandstone one of which appeared to contain the impression of a fern. The country continued to be nearly level as far as Euchilabar, and for 8½ miles beyond, when the road crosses a range of hills composed of massive beds of Devonian sandstones, containing quartz pebbles and highly impregnated with iron.

The strike of these beds is in a N.W. direction, and their dip is at a low angle towards the S.W. 14 miles from this range occurred the first outcrop of the porphyry before mentioned, the Mount Hope Copper-mines being still about 16 miles distant.

The copper-mines at Mount Hope may be divided into three chief outcrops, more or less in a line with each other; namely, Mount Hope, South Mount Hope, and McDowall's; of these Mount Hope is in iron sandstones having a strike N. 7° E. and dipping 80° to the west, while the other two are in a porphyry formation.

The copper at Mount Hope appears to occur in a defined lode composed largely of quartz, argillaceous matter, and earthy blue and green carbonates of copper, with occasional masses of red and brown iron ore, and also some earthy red oxide of copper and grey sulphide. The main lode is 24 feet wide on the surface, and there are two parallel outcrops; the whole may however be looked upon as what is known to miners as a "blow," and affords no idea of what the width of the lode will be lower down. The lode has a strike N. 7° 30′ E. A shaft has been sunk to a depth of 60 feet on the main outcrop, and some earthy carbonates extracted and dressed. There being no means of descending the shaft, I was unable to ascertain the appearance of the lode at the bottom of it. There are several tanks and huts in connection with this mine, and it is a pity that it has not been further developed. Like most of the copper deposits in this district, the Mount Hope lode crops out on the top of a small hill; and as this fact has been commented upon, and I think will help in the discovery of other deposits, I beg to offer the following explanation. When the lodes were formed, and while they were being filled up with minerals, the neighbouring rocks were doubtless impregnated by siliceous and iron-bearing solutions, and consequently became hardened in the immediate vicinity of the lodes, and therefore better able to resist subsequent denudation, which has left them at a higher level than the rest of the country. The view from Mount Hope is very extensive.

South Mount Hope, Messrs. Brown and party.—Here copper ore has been found in five or six places, but in my opinion the presence of a well-defined lode has not been established. The veins appear to run in a N. and S. direction, and are composed of quartz, earthy carbonates, red oxide, and a little grey and yellow sulphides; the rock adjoining the veins is a breccia of the porphyry of which the hill is composed. Four shafts have been sunk 20, 30, 40, and 46 feet deep respectively, also two tanks excavated, and a dwelling-house put up.

McDowall's mine.—The mineral deposit on this lease consists of a large mass of porphyry breccia, the pieces of porphyry being cemented together by oxide of iron containing a little copper; thus an essay of some of the cementing matter has been made by Mr. W. A. Dixon, F.C.S., and gave 4·32 per cent. of copper. Two shafts have been sunk—one, I was told, to a depth of 70 feet, but as this one was half full of water at the time of my visit, I cannot tell what light it has thrown on the value of the property. Amongst the material excavated, I noticed some earthy carbonates and a little rich red oxide of copper. For a distance of 50 yards round the main shaft the rock is literally seamed with veins of red oxide of iron, varying in thickness from a film to 2 inches.

These mines were taken up by energetic but poor men, but have been unworked for the last two years; they furnish conclusive proofs that, to prosecute copper-mining to a successful issue, capital is an essential. This is found to be the case even if the deposit occurs under the most favourable conditions, including cheap freight and labour; when therefore, as in the present instance, both freight and labour are costly, the employment of capital becomes absolutely necessary, and it is a pity that for the want of a little these mines, so long known, and offering such promising surface indications, should have remained comparatively untested.

From Mount Hope I proceeded to Nimagee, *via* Gilgunnia and Nimagee Station. After crossing my former line of route, 16 miles north of Mount Hope, the country traversed was of a hilly and undulating nature for the first 34 miles, and consisted of porphyries and altered rocks. The next 10 miles was over alluvial country covered with yarran scrub, to which succeeded 14 miles of undulating country composed of Devonian sandstones, the vegetation on which was box and malee scrub; the road then traversed slate country for 2 miles, which at Nimagee Station rests against granite. At the back of the station there is an isolated granite hill, about 300 feet high, from the top of which may be seen a magnificent view of the surrounding country.

From Nimagee Station the mine is distant 6 miles. At ½ a mile from the station the granite is replaced by slate, which formation continues uninterruptedly to the mine. The only lease on which any work has been done is the one owned by Messrs. Barton & Company, where operations are being carried on in a most energetic manner. The slate rocks adjoining these copper deposits are of a sandy character, and have a strike N. 24° W., dipping to the S.W. at an angle of 68°. At Nimagee Mine there appear to be two lodes. The main lode has a strike N. 17° 30′ W., and is nearly vertical; three shafts have been sunk on it, at a distance of 276 feet apart. To the east of the middle shaft (No. 3) may be seen the outcrop of a branch lode, having a strike of N. 9° E., and which as yet remains unexplored. The three shafts are down respectively, No. 1, 120 feet; No. 3, 55 feet; and No. 2, 80 feet. The width and composition of the lode in the bottom of these shafts are as follows:—No. 1, an open lode 8 feet wide, composed almost entirely of yellow sulphide, mixed with black oxide of copper. No. 3, the lode is 8½ feet wide, and is composed of earthy carbonates, grey sulphide, and red oxide of copper, mixed with decomposed slate and brown iron ore. No. 2, the lode is 5½ feet wide as yet, but the whole width has not been exposed; it contains large masses of brown iron ore, and grey sulphide and red oxide of copper. The second lode on this property is called the east lode; it has a strike N. 18° W., and is composed of argillaceous matter, earthy carbonates, red oxide, and grey and yellow sulphide of copper, the latter only in patches; a shaft was being sunk on the lode, and was 20 feet down at the time of my visit. The captain in charge of the mine informed me that there were some 300 tons of ore on surface. The day of my visit, a 1,200-yard tank was being completed; buildings were going up on the township and mine, and four furnaces were in process of erection.

The prospects at Nimagee are extremely promising, the presence of a well-defined and rich copper lode having been completely established; the assay of the copper ores has also shown them to be free from the presence of other and injurious minerals. The timber of the neighbourhood is box and pine. No. 1 shaft on this lease has been sunk close to the northern boundary of the next lease, owned by Messrs. Andrew and M'Clunie, and they may be congratulated on having the presence of so fine a lode proved within a chain of their ground. No work has been done on Andrew and M'Clunie's lease, but surface indications of copper are to be seen in several places.

Having returned to Nimagee Station, where I was most kindly entertained by Messrs. Knox and Ellis, I started the following day for Cobar *via* the Brickkilns. At the back of Nimagee Hill, which, as before remarked, is of granite, for the first 14 miles the formation consists of slates, varied by occasional outcrops of granite. The road then skirted a small rise composed of a quartz and sandstone conglomerate; after which, the formation, till within 12 miles of Cobar, is Devonian. At the Brickkilns, 25 miles from Cobar, there is a deposit of clay used in the manufacture of fire-bricks—two buckets of the clay being mixed with three buckets of sand; limestone is also found in scattered patches in the locality, and a kiln of the same was being burnt at the time of my visit. 12 miles from Cobar, after passing for about ½ mile over the remains of a conglomerate, the road again enters on the slate country.

At Cobar I had every facility given me for acquiring information concerning the country and mine, and my best thanks are due for the same to Messrs. Machattie, L.S., Barton, O'Neil, and Captain Dunstan. The latter gentleman kindly allowed me to go underground and see the great width of the Cobar lode. The workings are on what is known as the west lode. On the surface there appears the outcrops of two adjacent parallel lodes; it is my opinion, however, that all three form one lode, being only separated by pieces of ground known to miners as "horses." Captain Dunstan informed me that he intended shortly driving a cross-cut from the 39-fathom level, to intersect the two easterly lodes. The characteristic point in the Cobar Mine is the great variation in the width of the lode, namely, from a mere film to 100 feet. This may be explained by the fact that in slate rocks it would be natural, where large fissures occurred, for the sides in places to fall together, closing the fissure at some points, but by this means keeping it widely opened at others; the great width of the Cobar deposit therefore does not seem to me to preclude it from being considered a lode.

The ore from the 54-fathom level is composed of solid yellow sulphide of copper; from the 39-fathom level, of carbonates, metallic copper in films, red oxide, grey sulphide, and brown iron ore—the lode being fairly compact.

At the 26-fathom level the ore is principally carbonate of copper mixed with iron ore, while the lode is less compact. The ore is hand-picked, broken up, and sent to the smelting works in five classes, and the smelting-master mixes from these his furnace charges. Twelve furnaces are at present at work: nine reducing ore to regulus, two roasting regulus, and one refining coarse copper. It will thus be seen that oxidized ores are available in such quantity as to enable the process of roasting the sulphuret ores being dispensed with. Twelve more furnaces are being put up, and I am informed that atmospheric drills are to be shortly introduced into the mine.

From Cobar I rode to Florida, the station of Mr. M. Langtree, L.-S.; this gentleman kindly supplied me with fresh horses to visit the West Bogan Mine, as my own were knocked up. 10 miles from Cobar the Devonian strata again formed the surface of the country, and continued to do so for 20 miles, resting near Florida on porphyry and slate formations. Where the sandstones terminate is an isolated hill of quartz conglomerate, locally known as "Bobby"; it is an outlier of Devonian conglomerate, and identical in appearance with the rock found due south of it, near Nimagee. The beds have a strike N. 40° E., dipping to the N.W. at an angle of 20°.

From within 2 miles of Florida to the West Bogan Mine, the formation is slate. The copper deposit is situated in No. 5 West Bogan Block, near the N.W. corner, and on the summit of it a small hill, long known as Copper Hill. The lode has a strike N. 18° W., and dips to the eastward at an angle of 56°. A small trench has been made across the lode, showing it for a width of 18 feet to be composed of viens of quartz, including between them bands of slate and occasional bunches of extremely rich red oxide of copper coated with green carbonate. The lode may be again seen 100 yards to the north of the trench, and copper indications also occur about 30 yards to the N.E. of the same place. The strike of the slates is N. 12° E.

Having returned to Florida, I started for the Bogan River, *via* the reported copper find at Honeybogle. For the first 12 miles the country consisted of porphyries and altered rocks, and thence to the river, of slates. Some 16 miles from the river, however, occurs a patch of hornblende porphyry, in which a quartz reef, stained with carbonate of copper, has been discovered, and a shaft 30 feet deep sunk on it. The reef runs N. 6° W., and dips slightly to the west; it is about 14 inches wide, and in my opinion far more likely to produce gold than copper.

The country to the east of the Bogan River is remarkably level, being covered with Tertiary alluvial. On arriving at Warren my horses were so completely knocked up, having carried myself and my assistant for over 700 miles, that I had to leave them, taking the coach as far as Wellington, and thence the train to Sydney. At Dubbo Mr. John Brown showed me a piece of quartz from a reef near Dandaloo, which greatly resembled in appearance that of the Honeybogle Reef.

In conclusion, I would beg to point out that the district I inspected is one likely to be highly metalliferous. Not only have some copper and other deposits been found in widely separated localities, but the rocks of the country are also in every way favourable to the presence of minerals such as gold, tin, and iron. In addition to this, it is certain that where the old valleys, now filled with alluvial, drained across auriferous formations, payable gold leads must exist, and I am convinced that some such will be found in this district.

My best thanks are due to the gentlemen I met, for the kind manner in which they assisted me, both with information and in other ways; and also to Mr. J. Carne, my assistant, without whose knowledge as a bushman my trip would have been considerably retarded.

I have, &c.,
LAMONT YOUNG, Assoc. R.S.M., &c.,
Geological Surveyor.
The Under Secretary for Mines.

APPENDIX 7.

Report by Lamont Young, Esq., F.G.S., Geological Surveyor.

Sir,
Department of Mines, 6 September, 1880.

In accordance with your instructions I have inspected the Temora Gold-field, with a view to forming an opinion as to its prospects, and beg to submit the following report.

The township of Temora is situated in the parish of Bundawarrah, county of Bland, and between the Trigalong and Narraburra Creeks, the first-named lying 2 miles to the west and the second 5 miles to the east. These creeks are merely depressions in the alluvial surface of the country, and trees grow in the deepest portion of their channels; at times however, the banks are well defined, and the erection of a small dam will throw the water back a considerable distance.

The principal geological formations in the district are Silurian slates and conglomerates; near the Temora sheep station these rest against granite, and at the township itself against a long hill of diorite (or greenstone) running north and south, and adjoining the auriferous alluvial on the east. To the north-east, east, and south-east of the diorite is a belt of altered rocks, and beyond these the slate formation.

The auriferous alluvial at Temora fills a deep and narrow valley draining between the slates and the diorite in a northerly direction. In both these formations there are numerous quartz reefs, but gold has only been found in those occurring in the diorite; reefs also occur in the altered rocks to the eastward, and one or two of them have been reported gold-bearing. The length of the lead known to be auriferous may be set down as 2¼ miles; its character as far as it has been proved shows that the gold is chiefly coarse, and irregularly distributed; also that it is of a light colour, and as a rule very little water-worn. Near the upper township the lead divides into two branches, one crossing the diorite in an easterly direction, and the other continuing to skirt it on the west. No gold discoveries of any consequence have yet been reported in the alluvial to the south of the diorite, but some rich surfacing has been got on the south-west slope of the diorite hill at the upper township, immediately below the Lady Mary, Warnford's, and other reefs. These facts indicate that the reefs in the diorite are the source of the alluvial gold that has been found as yet. I am therefore of opinion that the lead will only be payable in the vicinity of the diorite, and that rich surfacing and leaders will be found near the Ironclad, Red Hill, Eldorado, Hidden Star, and other reefs. These reefs may themselves be worth working, but I think will vary considerably in width, extent, and gold-bearing qualities. Should other outcrops of diorite be found in the district—and there is every likelihood of such being the case—the old drainage channels crossing them may be expected to be auriferous in the immediate vicinity. There is one fact I should mention which is favourable to the discovery of gold-bearing reefs in the slates and conglomerates, namely, that it is in these very formations that the valuable reefs of Barmedman occur, situated some 28 miles north of Temora.

From such tests as have been applied, and by comparing the local conditions with those of other and similar gold-fields, such as Gulgong, Forbes, &c., it may be anticipated that the alluvial deposits (so far discovered) of Temora will be worked out in about five years, and that as a reefing district it will furnish employment to miners for a considerably longer period.

Such are the prospects of this gold-field as indicated by its geological features and the practical tests as yet applied, but it is impossible to form an estimate of the richness of its alluvial deposits until a few thousand loads have been washed. At present, as stated in Mr. Warden Sharpe's report, there is a considerable quantity (some 60,000 loads) of washdirt on surface, but unfortunately no water with which to treat it. This want of water prevents also the thorough prospecting of the neighbouring country.

I have, &c.,
LAMONT YOUNG,
Geological Surveyor.

The Under Secretary for Mines.

APPENDIX 8.

Report by Lamont Young, Esq., F.G.S., Geological Surveyor.

Sir,

Department of Mines, Sydney, 2 October, 1880.

In accordance with your instructions I have visited Mount Werong, the site of one of the recent gold discoveries, and beg to submit the following report.

Mount Werong is situated in the parish of Werong, county of Georgiana, close to the Main Dividing Range of the Colony, which at this locality forms the boundary between the counties of Georgiana and Westmoreland. The summit of Mount Werong is the highest point in the neighbourhood, and it has therefore been chosen as a station by the Trigonometrical Survey, and a small reserve, No. 10, made round it.

The geological formations of the locality are slate, granite, and basalt, the first-named composing the main mass of the country, and being intruded by dykes and masses of granite, while the summit of Mount Werong is composed of basalt. Over the slate and granite formations, and even in places situated on the top of the main range, is spread a considerable amount of alluvial, composed chiefly of sand, clay, and rounded quartz pebbles, the latter varying in diameter from 4 inches to an eighth of an inch. It is in this alluvial that the gold is found, and so evenly distributed that as good a prospect can often be got on the top or side of a ridge as in the gully below it. The prospects hitherto washed have yielded from a colour to half a grain to the dish, and sluicing has given in one locality a return of 10 dwts. for eight loads.

The gold as yet found is very fine, of a dark colour, and, examined under the microscope appears more or less water-worn, some pieces being almost perfectly round. Associated with the gold are zircon (both white and red), sapphire (blue and green), pleonaste, a black variety of spinel, and quartz. One or two of the gold specks contained embedded portions of quartz. The prospectors, Messrs. Murdock and party, showed me portion of a small quartz leader highly impregnated with iron pyrites, but in which no free gold could be seen. The specimen was found in the locality.

A noticeable feature at Mount Werong are the swamps and springs; and when considered in connection with the large rounded quartz pebbles found at Mr. M'Kay's claim, the fact of the gold being water-worn, the widely-scattered nature of the alluvial, and also that the highest ground in the neighbourhood is an inconsiderable mass of basalt, the conclusion indicated is that an old lead has existed in the locality, formerly covered with basalt, which has since been removed by denudation, while the contents of the lead have been spread over the adjacent country. Should any portion of the gutter of this old lead be discovered intact, payable gold will most likely be found.

The following parties were working at the time of my visit:—

Walter Munn and party have washed eight loads, with a yield of 10 dwts.; the bed rock is granite; sinking, 2 to 17 feet, and very wet.

Creighton and party have been a month on the diggings, and only got a few colours; sinking, 11 feet; bed rock granite; ground very wet.

Prospectors' party are sluicing the bed of a gully; the bed rock is slate, but 50 yards up the gully it is granite; alluvial, 2 to 5 feet deep; gold colours can be got all over adjoining ridges.

M'Kay and party.—The surveyed line along the Main Dividing Range runs through this claim; sinking, 23 feet, but the deep ground has not yet been struck; the bed rock is granite. There is 3 feet of wash, expected to yield 1½ dwt. to the load.

As yet the extreme cold and the wet weather have discouraged intending prospectors; but as the formations of the locality are themselves auriferous, and there is also a chance of payable alluvial being found, the locality is certainly worthy of being thoroughly prospected.

I have, &c.,
LAMONT YOUNG, Assoc. R.S.M.,
Government Geological Surveyor.

The Under Secretary for Mines.

APPENDIX 9.

Report by H. B. Sullivan, Esq., Licensed Surveyor.

Sir,

Sydney, 10 June, 1880.

I have the honor to inform you that I have just returned from Kiandra, where I have been occupied, according to your instructions, in running a level from the Nine-mile Diggings to a branch of the Tumut River known as the Doubtful Creek, in order to ascertain if water could be brought from that creek to a point commanding the different claims, by means of a race or otherwise.

I took as my datum level a point about 120 feet above the level of the wash in the Empress claim, the principal claim on the Nine-mile Diggings. This datum point was selected, because not only would water from it be available for the Nine-mile claims, but also for the other auriferous deposits in the Kiandra district. Thence I ran a contour line following the main range which separates the waters of the Tumut and the Eucumbene Rivers. At 9½ miles from the start the range falls suddenly, and causes a small break 550 links wide, across which the water may be brought by fluming, as the break in the lowest part is only 30 feet above the datum point. 30 chains further on is Russell's Gap, which is below the level for a distance of 370 chains, and at the lowest place is 292 feet below the datum point. The range is then very low for a considerable distance, and three other gaps occur at short intervals. The first, which I believe is called Harnett's Gap, is 250 chains wide, and at its lowest part is 255 feet below the datum line; the next, known as Barney's Gap, is about 80 chains wide, and is 182 feet below datum line; and the third, or Snowvale Gap, is 198 chains wide and 385 feet below datum line. After leaving the Snowvale, the range rises very rapidly, and, with the exception of two small breaks, is much higher than the Nine-mile claims, and I considered it advisable, owing to the lateness of the season, not to follow a contour line any longer, but to fix, if possible, a point on the Doubtful Creek which would allow sufficient fall to the claims in question; but I was unable to do this, as the weather was extremely severe, and snow had been falling almost uninterruptedly during my last fortnight there, and was very thick on the ground. However, I reached the creek a little lower down, and left a bench mark on its right bank, at a point 72·67 feet above my datum point. The stream at this place is 12 to 15 feet wide and nearly 3 feet deep, and has a fall of 80 feet per mile. The valley through which it flows is very swampy, and abounds in small brooklets, which seem to be fed by the melting snow.

The distance chained by me was 28 miles; but as I did not follow a contour line towards the end, the total length of the race may be set down very approximately as 30 miles. The ground over which the water would be brought is, with the exception of a small extent of basalt near the Nine-mile, entirely of diorite and granite formation, and where the latter occurs is very porous; so that, I think, unless it were puddled, or a very considerable fall given, it would absorb the water very rapidly. Even if the main range were high enough throughout to render piping unnecessary, a fall of less than 4 feet per mile would hardly be advisable, while even more might be allowed, as I have been informed that the snow frequently stops the races cut by the miners, which, though very much smaller than the one in question, would have a much more rapid fall. This would make the water source at least 120 feet higher than the datum point, and therefore 50 feet higher than the point on the Doubtful reached by me.

The whole amount of piping to be done would be about 11 miles, chiefly embraced in the four gaps above mentioned; and allowing a head of only 8 feet per mile to overcome friction, this would bring the source nearly 50 feet higher still, or, in all, 170 feet above the datum point, and consequently 1¼ mile nearer the head of the stream than the place at which I left off. This would naturally reduce the volume of water available, and the chances of its being permanent in all seasons, very much.

I have been informed by some of the residents of Kiandra that the supply might, if necessary, be augmented by cutting a canal from the Burrungubugge River, which rises on the eastern face of the main range, and about 2 miles further south than the Doubtful, to the Snowvale Gap, where the two races could meet; but of the practicability of this I am unable to speak, as I have not examined it.

Owing to the elevated position of the Nine-mile claims, I did not see any gully or basin within a reasonable distance of the said claims which could be converted into a reservoir. The winter being so far advanced and the weather exceedingly bad, I was unable to level from the Nine-mile to Kiandra; but from observations taken with the barometer on two occasions, I estimate the latter place to be 550 feet below the former; and as the gap in the Dividing Range between these localities is 330 feet below the Nine-mile, a race could be constructed over it to Kiandra.

The number of men at present employed in mining in the vicinity of Kiandra is very small, on account of the insufficient supply of water, derived almost entirely from the melting snow, so that they are compelled to work during the worst part of the year, almost the only time in which the races are of use; but there is no doubt that if hydraulic power were available there would be profitable work for thousands of miners, as in fact the deep ground which extends over many square miles may be said to be as yet untouched.

I have, &c.,
H. B. SULLIVAN,
Licensed Surveyor.

The Under Secretary for Mines, Sydney.

APPENDIX 11.

LIST OF DONATIONS to the Museum of Mines during the year 1880.

Contributor.	Contributions.	Where from.
Mr. W. B. Christie, L.S.	Molar of diprotodon	Beaufort, Clairvailla Creek, Glen Innes.
Major Wells	Actinocrinites	Nowra.
Do.	Sanguinolites undatus	Do.
Do.	Spirifer glaber	Do.
Do.	Do. convolutus	Do.
Do.	Productus	Do.
Do.	Spirifer	Do.
Do.	Terebratula	Do.
Do.	Pleurotomaria	Do.
Do.	Cyathocrinus Konincki	Do.
Do.	Waterworn pebbles	Do.
Mr. Thos. Hunter	Metallic bismuth	Cloncurry, Queensland.
Mr. W. O'Rourke	Pyritous stone	Nambucca, Macleay Heads.
Hon. G. H. Cox	Porphyry	Port Macquarie District.
Mr. A. Goldie	Red paint	Cape Possession, New Guinea.
Do.	Serpentine, slate, and quartz	Near Hood Bay, New Guinea.
Do.	Magnetic iron sand and crystalline quartz	D'Entrecasteux Island, New Guinea.
Do.	Ironstone concretions and manganese	Cape Possession, New Guinea.
Mr. W. H. Wesley	Fossil wood	Garden Palace Tin Mine, Vegetable Creek.
Mr. Kermode	Auriferous quartz	Nundle.
Do.	Vitreous and chalcedonic quartz	Do.
Do.	Iron ore	Do.
Do.	Petrified wood	Do.
Mr. Baynes	Limestone	Fish River Caves.
Mr. M'Callum	Limestone tufa	Murrumbidgee.
Mr. Ryall	Common opal	Cobar.
Mr. Orchard	Regulus	Port Mackay, Queensland.
Mr. Deitz	Fossil bones	Canadian, Gulgong.
Hon. E. A. Baker	Cerussite	Peelwood.
Capt. Armstrong, R.N.	Basalt	Lord Howe's Island.
Mr. Madden	Iron sand	Head of Richmond River.
Mr. F. C. Suttor	Galena	Mt. Grosvenor, Peel.
Mr. Roman	Antimonite	Near Uralla.
Mr. Madden	Serpentine	Between Manning and Macleay Rivers.
Mr. G. W. Rudder	Magnetite	Near Kempsey.
Mr. Thos. Brown	Gypsum	Ontario, Canada.
Mr. J. B. Engelen	Nitrogenous substance	Gundagai.
Do.	Slickenslide in serpentine	Jones's Creek, Gundagai.
Do.	Calcite in serpentine	Do. do.
Mr. S. L. Bensusan	Sulphide of bismuth	New England.
Do.	Zinc ore containing lead, cadmium, silver, and gold	Thames Gold-field, New Zealand.
Mr. T. Jeminson	Binoxide of manganese	Burnet District, Queensland.
Mr. J. H. Slee	Basalt with hydrosilicate	Vegetable Creek.
Do.	Miocene sandstone	Do.
Do.	Basalt	Do.
Do.	Alluvial strata containing gold	Do.
Do.	Dressed tin	Do.
Do.	Ironstone with leaf impressions	Do.
Do.	Fossil wood	Do.

Contributor.	Contributions.	Where from.
Mr. J. H. Slee	Basalt	Vegetable Creek
Do.	Fossil leaves	Do.
Do.	Silver ore	Nil Desperandum Reef, Boorook.
Do.	Copper ore	Milburn Creek.
Rev. Julian E. Tennison-Wood	Silicate of nickel	Tasmania.
Do.	Native implement	Vale Creek, Bathurst.
Do.	Rock containing green mineral traversed by quartz veins.	Beaconsfield, Tasmania.
Do.	Sulphide of copper	Do. do.
Do.	Silver ore	Hampshire Hills, do.
Do.	Graphic granite	Bathurst.
Melbourne & Gundagai Asbestos Company.	Auriferous serpentine	Gundagai.
Do.	Black quartzite	Do.
Do.	Asbestos	Do.
Mr. Stevens	Coal	Huon District, Tasmania.
Mr. P. F. Adams	Altered jasperoid rock	Urana.
Do.	Nitrogenous substance	Do.
Mr. Hugh Sutherland	Kaolin	35 miles from Orange, on Forbes Road.
Mr. Sindbeck	Specular iron	Tumut.
Mr. Taylor	Agates	Grove Creek, Trunkey.
Mr. R. Albury	Sand cemented by mundic	Hanging Rock, Nundle.
Mr. Collopy	Obsidian	Port Macquarie.
Dr. Jenkins	Hawkesbury sandstone	Nepean Towers.
Mr. A. Armstrong	Ore of iron and manganese	Burrowa.
Hon. Alex. Stewart	Carbonate of bismuth	Silent Grove Creek.
Do.	Quartz containing bismuth	Do.
Do.	Tin, wolfram, &c.	Tableland.
Mr. S. Gray	Galena	Between Junee and Bethungra.
Mr. Warden Martin	Greisen granite, cerussite, &c.	Rocky River.
Mr. W. S. Campbell	Siliceous stalactites from a cave in Hawkesbury sandstone.	Woodford.
Mr. Gallagher	Antimonite	Armidale.
Mr. R. J. Campbell	Favosites	Wellington.
Do.	Jasperoid rock	Do.
Do.	Agates	Do.
Mr. G. W. Hartnell	Pitchstone	Quirindi.
Mr. C. Bransby	Corals	Port Jackson.
Mr. C. P. Laurence	Granite containing schorl	Fish River Creek.
Mr. J. L. King	Dendrites on sandstone	Narrandera.
Mr. F. Fitzpatrick	Quartz containing mispickel, &c.	Nambuccra.
Mr. G. Slater	Quartz containing galena, zinc, copper, and iron pyrites.	Near Goulburn.
Do.	Basalt	Do.
Captain Noyes	Graphite	Queensland.
Mr. Chapman	Garnet in wollastonite	Lucknow.
Do.	Garnet in calcite	Do.
Mr. J. K. Hume	Asbestos	Caloolah, near Trunkey.
Mr. Warden Sharpe	Encrinites	The Buckets, Gloucester.
Mr. H. Sullivan, L.S.	Tin ore and gold	Adaminaby.
Mr. E. Du Faur	Agates, &c.	Mount Pool, Grey Ranges.
Mr. A. B. Wigley	Antimonite	Kempsey.
Mr. Mumford	Do.	Do.
Do.	Green carbonate of copper	Sunny Corner, Mitchell's Creek.
Do.	Galena and copper pyrites	Do.
Do.	Pyritous stone	Do.
Do.	Galena, &c.	Do.
Mr. Brankston	Nickel ore	New Caledonia.
Mr. Langtree	Conglomerate	Cobar District.

APPENDIX 11—*continued.*

Contributor.	Contributions.	Where from.
Mr. Smith	Encrinital limestone	Mountain Maid Claim, Copeland.
Messrs. W. & T. Willis	Carbonate of copper with heavy spar	Bilbenluke, near Bombala.
Mr. D. Munro	Lode tin	Mann River.
Do.	Tin cement	Do.
Mr. M'Glue	Epidote	Rockhampton, Queensland.
Mr. Lewis	Chætetes radians	Wollongong.
Do.	Mæonia	Do.
Do.	Pachydomus	Do.
Macdonald & party	Auriferous quartz	Prospectors claim, Milburn Creek.
Mr. Theodore Ranft	Fluor-spar	Elsmore.
Do.	Decomposed basalt	Do.
Do.	Marcasite	Do.
Do.	Fossil leaves	Do.
Do.	Mammillary carbonate of iron	Do.
Do.	Calcite	Do.
Mr. Herborn	Galena	Kempsey.
Messrs. Cook Bros.	Antimonite	Macleay River.
Mr. James Barnett	Pachydomus	Milton.
Mr. W. T. Muston	Hydrosilicate	Vegetable Creek.
Mr. R. B. Wilkinson, M.P.	Sandstone	Urana Lake.
Mr. W. S. Capper, senr.	Specimen of auriferous copper lode	Near Cudgegong.
Do.	Calcite	Do.
Mr. Warden Graham	Argentiferous specimens	Golden Age, Boorook.
Messrs. Delaforce Bros.	Antimonite	Kempsey.
Mr. Warden Martin	Native bismuth	Do.
Do.	Bismuth ore	Do.
Do.	Decomposed granite with carbonate of bismuth	Do.
Do.	Molybdenite in quartz	Do.
Mr. A. Wood	Native sulphur	White Island, New Zealand.
Mr. Dalgleish	Carboniferous fossils	County Lincoln.
Mr. Jamieson	Petrified wood	Home Rule.
Mr. Martin	Mispickel	Glen Innes.
Mr. F. Rigby	Ferruginous quartz containing gold	Cobar.
Mr. W. H. Wesley	New mineral	Heisar's Lode, Vegetable Creek.
Messrs. Spicer & Rowe	Tertiary fossil leaves	Nundle.
Do.	Ironstone nodules	Do.
Mr. Cochrane	Antimony	Corangula Mine, Macleay River.
Mr. Marcus Macartney	Cretaceous fossils	Surat, Queensland.

Sydney : Thomas Richards, Government Printer.—1881.

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F.G.S., &c.

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The I

{ Upper Marine Series
Lower Marine Series

Metamorphic and Igneous

M	Serpentine
V	Diorite and Basalt (Volcanic and Trappean)
P	Porphyry
G	Granite

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c R.S.M., F.C.S.

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STATEMENT of the Quantity and Value of Minerals raised in New South Wales, prior to 1st January, 1880, with approximate areas of the mineral deposits, and the formations in which they chiefly occur.

		Quantity.	Value.	Approximate Area.	Formations in which chiefly found.
		Ounces.	£	Square miles.	
Gold		8,956,951	33,335,800	35,500	Cainozoic, Palæozoic, Granite, Porphyry, Serpentine, Diorite.
		Tons.			
Silver		578,106	143,501	500	Silurian, Devonian, and Granite.
Coal		20,640,075	11,036,722	23,950	Upper and Lower coal measures.
Shale, or Petroleum Oil Cannel Coal.		194,189	495,574	660	
Tin	Ingots	34,988	3,144,237	8,500	Granite.
	Ore	12,920			
Copper	Ingots	33,306	2,494,437	6,713	Silurian, Devonian, Granite, Serpentine, and Diorite.
	Ore	2,941			
Iron		*2,018	54,151	1,400	Coal measures, Silurian, Devonian, Wianamatta.
Antimony	Metal	62	10,178	400	Siluro-devonian.
	Regulus	142			
	Ore	260			
Lead		111	2,510	300	Granite, Metamorphic.

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* Prior to 1st January, 1878, the quantity of iron is not recorded, but simply the value.

Date Due